344

PROPERTY OF
L. F. BRANDENBURG
3924 MEADE ST.
DENVER, COLORADO

CONTENTS

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 325

PROPERTY OF
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DENVER, COLORADO

Philco Chassis TV-330 and TV-330U were covered in Photofact Folder 9 — Set 325. Chassis TV-331 and TV-331U are added along with model additions and late production changes.

Following is a list of models and chassis used in each.

MODEL	CHASSIS	MODEL	CHASSIS
18D3020C	TV-330	22D4138	TV-330
18D3020G	TV-330	22D4138L	TV-330
18D3020L	TV-330	22D4138U	TV-330U
18D3020M	TV-330	22D4138UL	TV-330U
18D3020UC	TV-330U	22D4139UX	TV-330U
18D3020UG	TV-330U	22D4139UXL	TV-330U
18D3020UL	TV-330U	22D4150	TV-330
18D3020UM	TV-330U	22D4150L	TV-330
18D3122	TV-330	22D4150U	TV-330U
18D3122U	TV-330U	22D4150UL	TV-330U
22D4029G	TV-330	22D4153	TV-330
22D4029L	TV-330	22D4153L	TV-330
22D4030E	TV-330	22D4153X	TV-330
22D4030L	TV-330	22D4153XL	TV-330
22D4030UE	TV-330U	22D4154	TV-330
22D4030UL	TV-330U	22D4154U	TV-330U
22D4032	TV-330	22D4158	TV-330
22D4131	TV-330	22D4158U	TV-330U
22D4131L	TV-330	22D4170	TV-331
22D4136	TV-330	22D4170L	TV-331
22D4136L	TV-330	22D4172	TV-331
22D4136U	TV-330U	22D4172L	TV-331
22D4136UL	TV-330U	22D4320L	TV-330
22D4136XL	TV-330	22D4320M	TV-330
22D4136XW	TV-330	22D4320T	TV-330
		22D4320W	TV-330

Run 4
Ch. TV-330
Ch. TV-330U

TO FACILITATE PRODUCTION

C61, C67, C68, R70, R80, R81 (Sync Coupling Network) are replaced by a CR printed circuit, part #30-6013.

R71, R72, C62A, C62B (Vertical Integrator) are replaced by a CR printed circuit, part #30-6012.

C69, C70, C71, R83, R84 (AFC Coupling Network) are replaced by a CR printed circuit, part #30-6007.

(Con't on reverse side)

PHILCO CHASSIS TV-330, TV-330U, TV-331, TV-331U

PRODUCTION CHANGES
BULLETIN 177

PRODUCTION CHANGES
BULLETIN 177

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	R41 is omitted. R44 is omitted. R47 is omitted. C2A is omitted. C45 is omitted. V3, 1st. video IF, and V4, 2nd. video IF, are changed from 6CB6 to 6DE6. R96 is increased from 100K to 470K. L19, 1st. video IF coil part number changed to #32-4684-2. L21, 2nd. video IF coil part number changed to #32-4684-1. L22, 3rd. video IF coil part number changed to #32-4684.
Run 5 Ch. TV-330 Ch. TV-330 U	TO IMPROVE HORIZONTAL STABILITY R86 is decreased from 1200Ω to 1100Ω. R82 is decreased from 56K to 47K.
Run 1 Ch. TV-331 Ch. TV-331U	CHASSIS COMPARISON Chassis TV-331 and TV-331U are electrically identical to chassis TV-330 and TV-330U, except for the following changes. A 17HP4, 21YP4 or 21YP4A/B picture tube is used. T3, horizontal output transformer, is changed to part #32-8724. A 2.5Meg focus control (part #33-5572-1) is added. The high side is connected to pin 10 of V17. The low side is grounded. The center arm is connected to pin 6 of V17.
Run 1 T Ch. TV-331 Ch. TV-331U	A few chassis TV-331, TV-331U coded Run 1 T uses power transformer part #32-8711. When this transformer is used, a .1Ω resistor must be connected in each side of the filament line. Power transformer #32-8690 may be used for a replacement. The .1Ω resistors added above are not used with this transformer.

PHOTOFACT* Folder
*TRADE MARK

AIRLINE MODELS GAA-951A, -952A, -953A, B, -955A, -957A, -982A

PROPERTY OF
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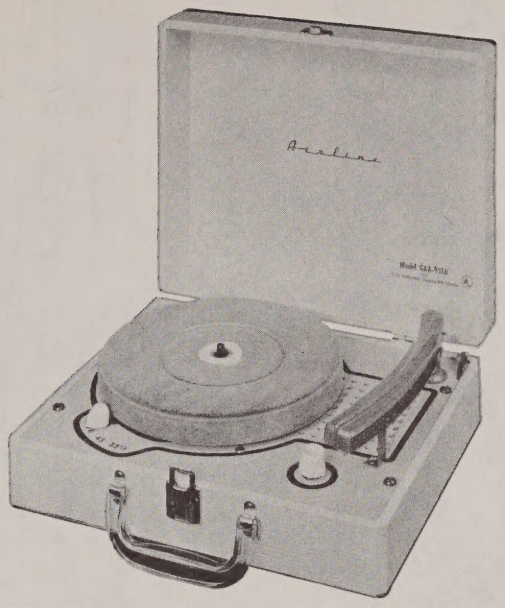
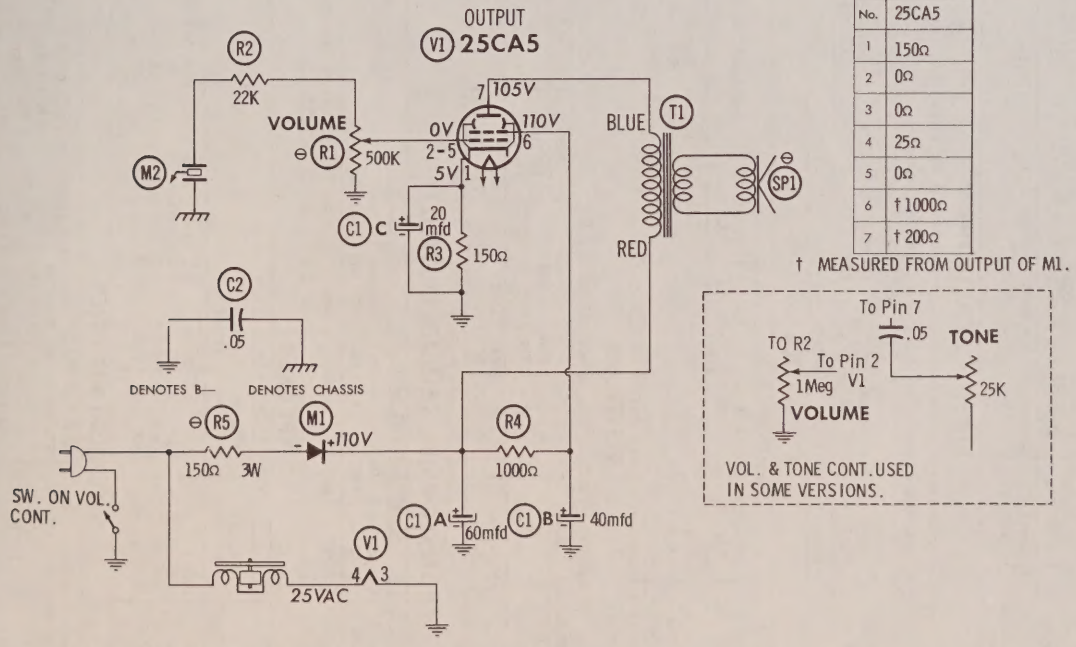
3924 MEADE St.
DENVER, COLORADO

AIRLINE MODELS GAA-951A, -952A, -953A, B, -955A, -957A, -982A



TRADE NAME	Airline Models GAA-951A, GAA-952A, GAA-955A, GAA-953A, GAA-953B, GAA-957A, GAA-982A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player (Model GAA-982A has 45RPM Record Changer)
TUBES (One)	Type 25CA5
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .34 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON THE 45RPM RECORD CHANGER USED IN MODEL GAA-982A - SEE SIMILAR RCA RP-190 SERIES - PHOTOFACT SET 144 - FOLDER 7 OR RECORD CHANGER MANUAL CM-4. OTHER MODELS LISTED ABOVE USE 3 SPEED MANUAL RECORD PLAYERS.



Pin No.	V1 25CA5
1	150Ω
2	0Ω
3	0Ω
4	25Ω
5	0Ω
6	† 1000Ω
7	† 200Ω

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	25CA5	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150	1016	PRS150/25V	BBRT8415C	TCT3117	TDL-552	FMT-333	R2199 *
B	40	150		8040/20					
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	412	AB-60				Volume - Note 1
B	Shaft		Not Req.	AK-4				Attach to R1A
C	Switch		Not Req.	KB-1				Attach to R1A

Note 1. Some versions may use a dual concentric control (Part #417A) in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	22K			BTS-22K	
R3	150Ω			BTS-150	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R4	1000Ω			BTS-1000	
R5	150Ω	3	633		Note 1

Note 1. Fuse type resistor.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	4000Ω	3-4Ω	Part of Spkr. 2623A	Z1000	A-3026	A-3856①	22S45	S-6X	① Drill one new mounting hole.

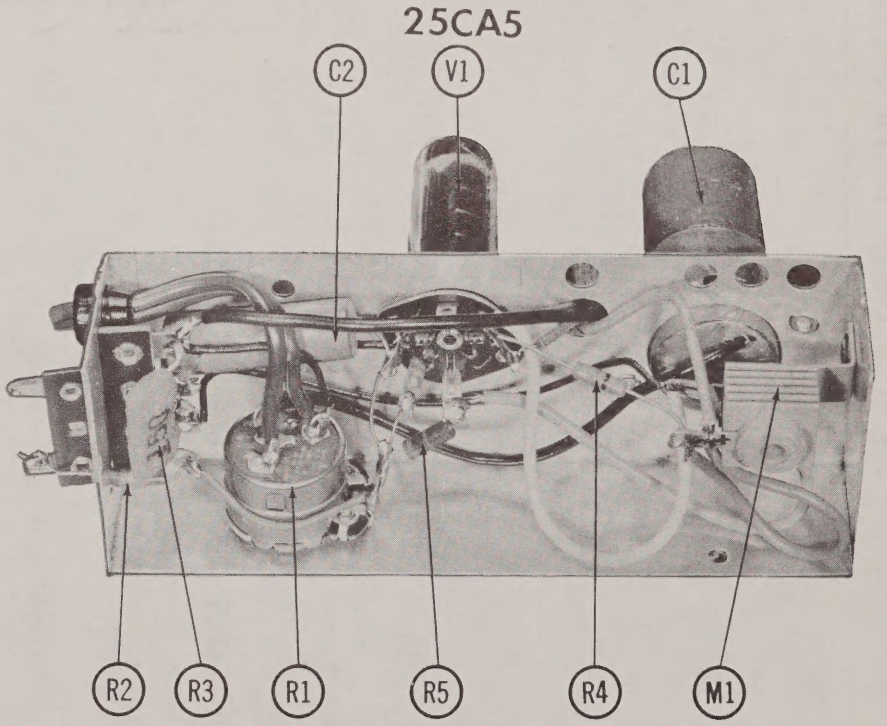
SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA AIRLINE PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	4"	PM	3-4Ω	2623A ①	4A07	223S1	① Used in Models GAA-951A, GAA-955A, GAA-957A
	4"	PM	3-4Ω	2623 ②	4A07	223S1	② Used in Model GAA-953A
	4" x 6"	PM	3-4Ω	2631 ③	46A07	246S2	③ Used in Model GAA-953B
	4"	PM	3-4Ω	2632 ④	4A07	223S1	④ Used in Model GAA-982A

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA AIRLINE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.035A	2723	1263A	RS065Q	6S65	8J1	65	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA AIRLINE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M2		106 *W-106	N6-2			Models GAA-951A, -952A, -955A, -957A
	60-46	62-1	K			Model GAA-982A
	60-45					Models GAA-953A, -953B
						* Complete tone arm and cartridge assy.

ASTATIC NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA AIRLINE PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	61-43	*W-122	*W-40AGA	Models GAA-951A, -952A, -955A, -957A
	61-46	*A-76LP or †A-67LP or ♦A-67LPD	*W-39MGA or †W-39MGS or ♦W-39MGD	Model GAA-982A
	61-44 (33 1/3 - 45 RPM Needle)	*W-58LP or †W-57LP or ♦W-57LPD		Models GAA-953A, -953B
	61-45 (78RPM Needle)	*W-58 or †W-57 or ♦W-57D		

* Metal † Jewel ♦ Diamond

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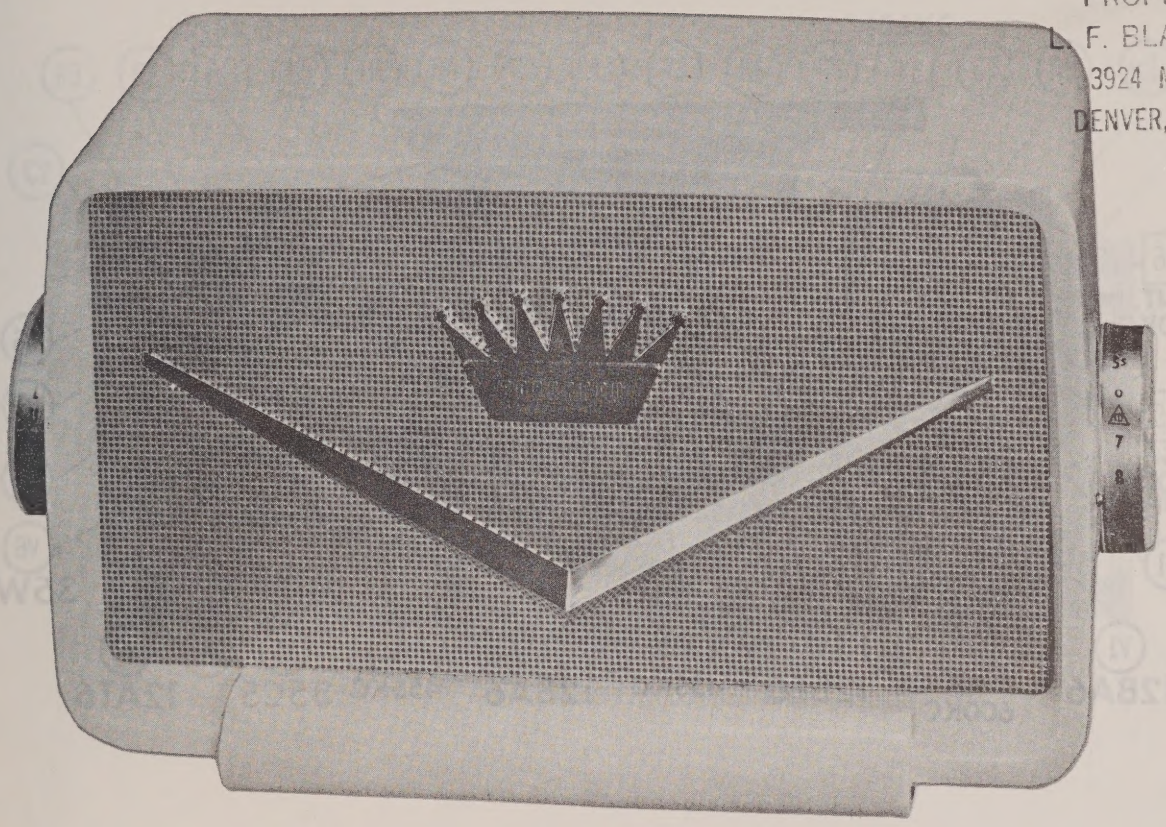
CORONADO
MODEL RA48-8351A



CORONADO
MODEL RA48-8351A

TRADE NAME	Coronado Model RA48-8351A
SUPPLIER	Gamble-Skogmo Inc., 15 N. 8th. St., Minneapolis, Minn.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Six)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12AT6 Det.-AVC-AF Amp., 35C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	A5	"
3.		Loop	1500KC	Tune to 1500KC signal	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. If A7 shows insufficient range, set A7 to mid-range and adjust opposite trimmer on gang.
4.		"	600KC	Tune to 600KC signal	"	A8	Adjust for maximum output while rocking tuning gang.

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PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL RA48-8351A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12BE6	
V3	IF Amplifier	12BA6	
V4	Det.-AVC-AF Amp.	12AT6	
V5	Output	35C5	
V6	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	150-119	PRS150V4040	BBRD4415	TCD48	TDLD-7	FMD-1540	TVA-2445
B	40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	300	500		SI300	D6-301	5R5T3	GP-300	MCB241	MS-33	Note 1
C3	.05	200	152-104	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C4	.05	200	152-104	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C5	300	500		SI300	D6-301	5R5T3	GP-300	MCB241	MS-33	Note 1
C6	.01	600		BPD-01	D6-103	CUB6S1	GP-10000	PT611	6TM-S1	Note 2
C7	10000		158-102	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C8	10000		158-102	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C9	.05	400	152-109	BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C10	.1	400	152-108	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	

Note 1. Some versions may use 270MMF in this application (Part #156-101).
Note 2. Some versions may use .002MFD in this application (Part #152-107).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	120-120	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch			Not Req.	SWE-12	76-1	US-26	Attach to R1A

RESISTORS

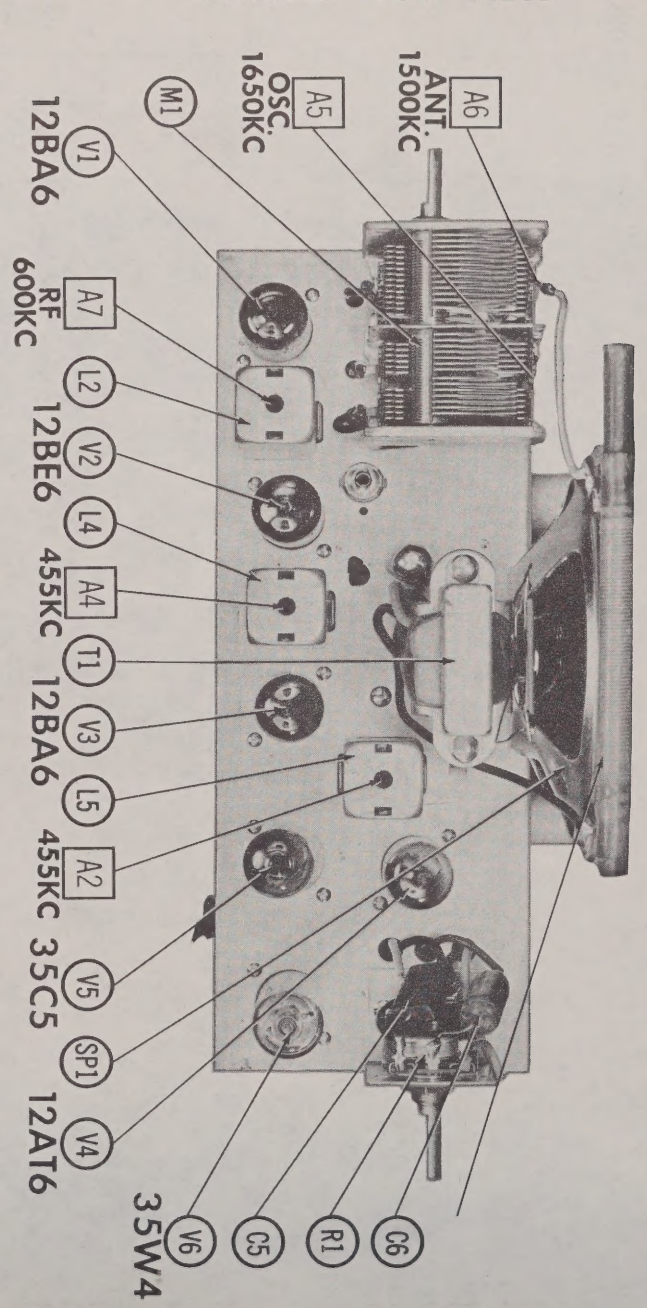
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R2	2.2Meg		180-107	BTS-2.2Meg	
R3	47Ω		180-103	BTS-47	
R4	20K 5%			BTS-22K 5%	
R5	390Ω			BTS-390	Note 1
R6	2.2Meg		180-107	BTS-2.2Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R7	1800Ω		180-159	BTS-1800	
R8	5.6Meg			BTS-5.6Meg	Note 2
R9	150Ω		180-111	BTS-150	
R10	10K			BTS-10K	
R11	1200Ω	1	180-160	BTA-1200	Note 3

Note 1. Some versions use 470Ω in this application (part #180-156).
Note 2. Some versions use 10Meg in this application (part #180-123).
Note 3. Some versions use 1500Ω, 1W in this application (part #180-157).

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CORONADO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3.1Ω	Part of Spkr.	Z1103①	A-3031 ①	A-3336 ①	24S50A ①	S-16X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	QUAM PART No.	RCA TYPE No.	
SP1	4"	PM	3.1Ω	175-117	4A07	223S1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	.4Ω		132-113				* Tapped @ 6.8Ω ■ Drill new mtg. hole
L2	RF Coil	112Ω	10Ω *	130-113				
L3	Osc. Coil	1.2Ω	10.5Ω	136-117			69-OSC ■	
L4	Input IF	17Ω	17Ω	130-102	16-6758	BC-352	12-C1	
L5	Output IF	8Ω	8Ω	130-107	16-6758	BC-353	12-C2	

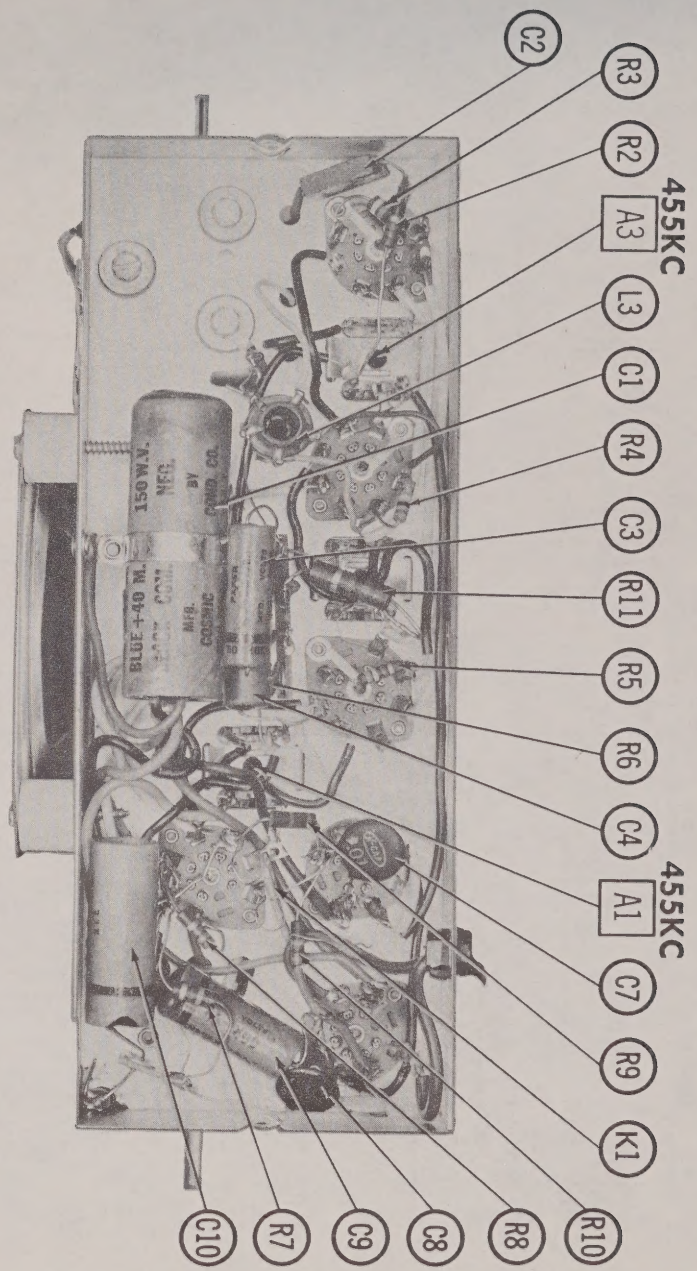
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO PART No.	REPLACEMENT DATA	
K1	Audio Couplate	250K, 500K, 5000MMF, 250MMF	106-109	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-112-2 PC-71 112TM2 1406-02 T-4

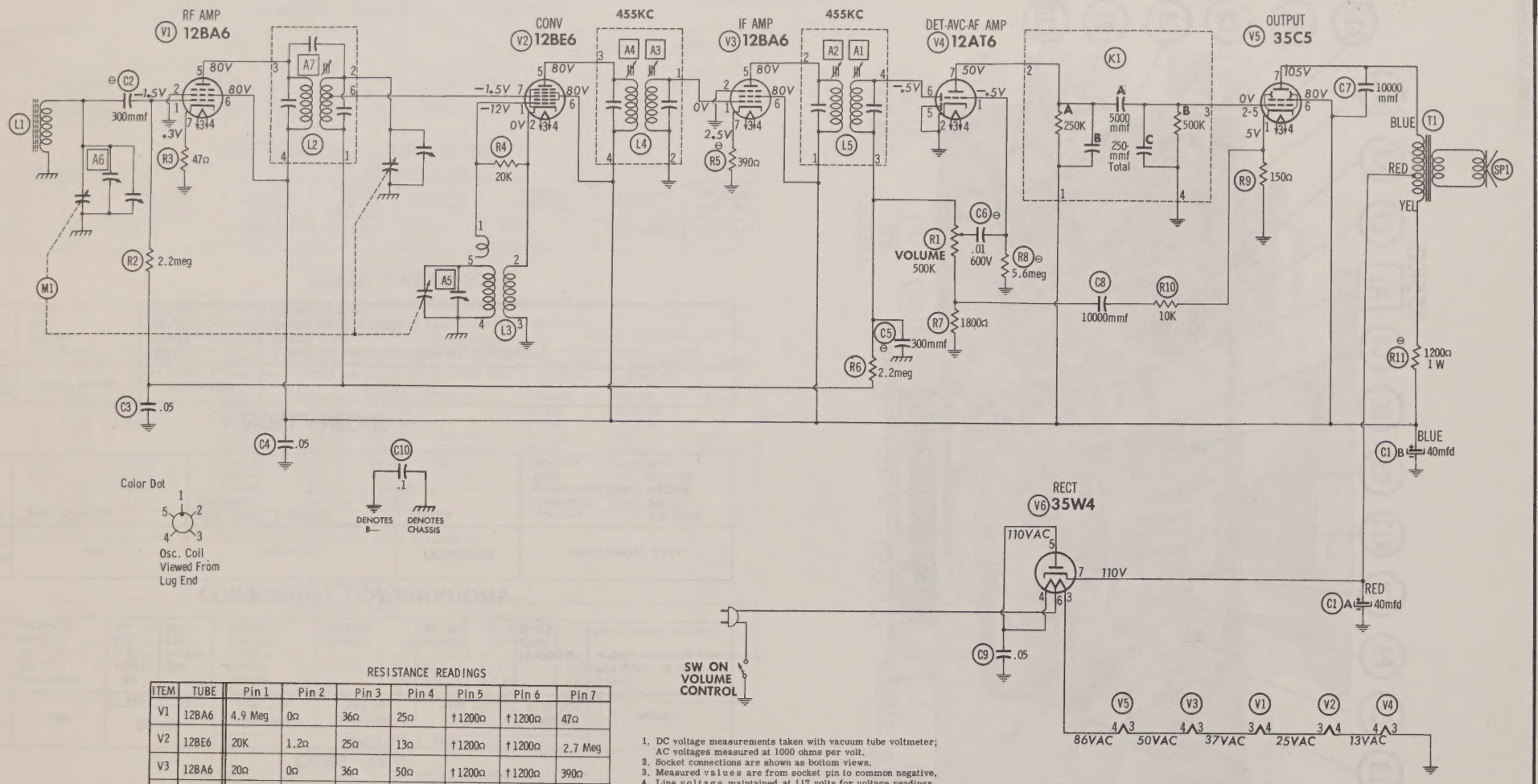
MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M1	Tuning Cap.	160-111	3 Gang (32-540MMF, 7-210MMF, 18-130MMF)
	Cabinet	210-115	Specify color
	Knob	220-116	Tuning (Specify color)
	Knob	220-117	On-off-volume

CHASSIS—BOTTOM VIEW



CORONADO
MODEL RA48-835LA



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BA6	4.9 Meg	0Ω	36Ω	25Ω	†1200Ω	†1200Ω	47Ω
V2	12BE6	20K	1.2Ω	25Ω	13Ω	†1200Ω	†1200Ω	2.7 Meg
V3	12BA6	20Ω	0Ω	36Ω	50Ω	†1200Ω	†1200Ω	390Ω
V4	12AT6	5.6Meg	0Ω	0Ω	13Ω	0Ω	500K	†250K
V5	35C5	150Ω	500K	50Ω	85Ω	500K	†1200Ω	†260Ω
V6	35W4	TP	TP	85Ω	105Ω	105Ω	115Ω	80K

† MEASURED FROM PIN 7 OF V6.
TP TIE POINT

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DENVER, COLORADO

CRAFTSMEN
MODEL CT-3

CRAFTSMEN
MODEL CT-3

TRADE NAME	Craftsmen Model CT-3		
MANUFACTURER	Radio Craftsmen Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.		
TYPE SET	AC Operated FM-AM Tuner		
TUBES	Twelve		
POWER SUPPLY	110-120 Volts AC - 60 Cycles	RATING	.47 Amp. @ 117 Volts AC
TUNING RANGE -BROADCAST	550KC - 1650KC	FREQ. MOD.	88MC - 108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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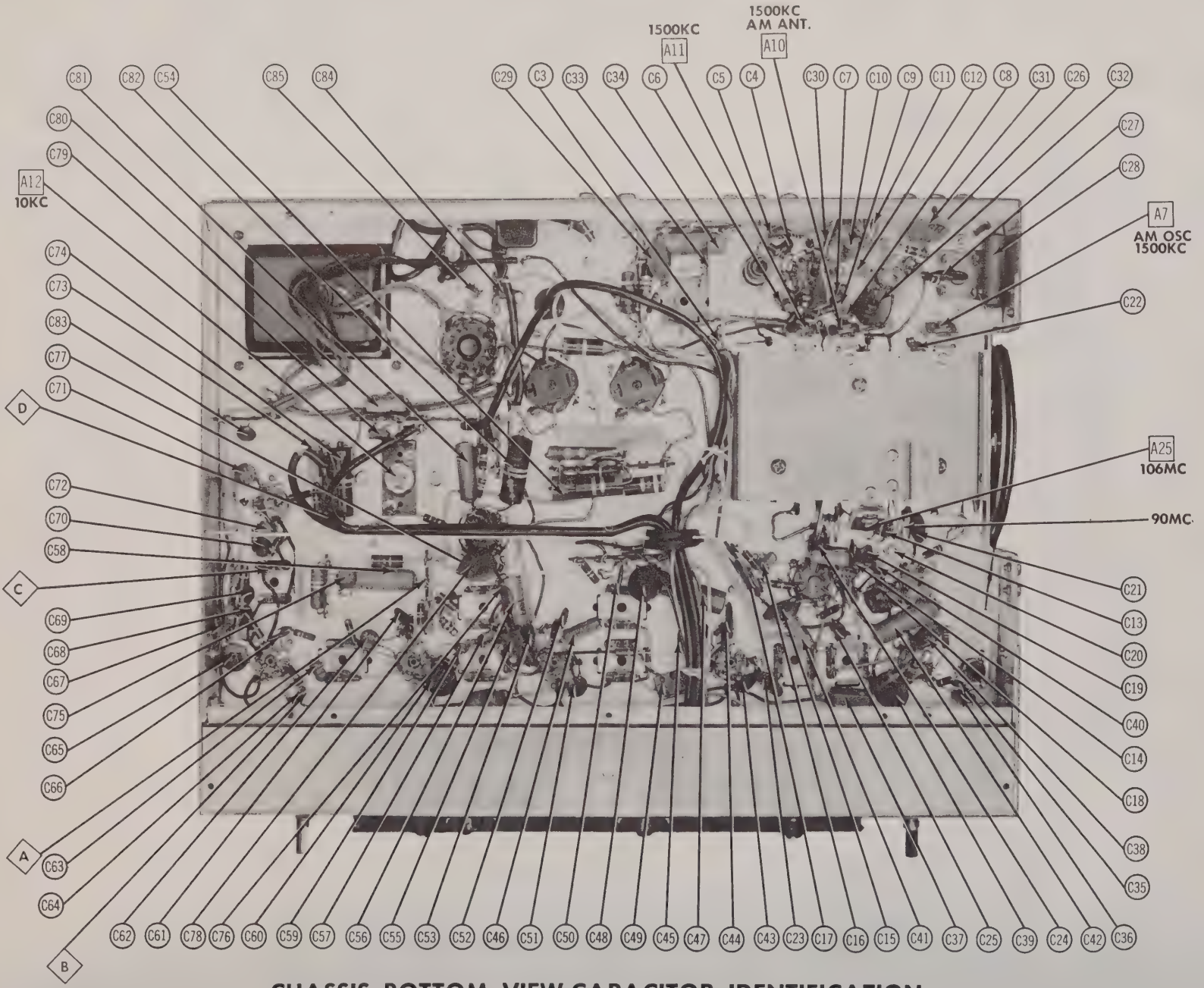
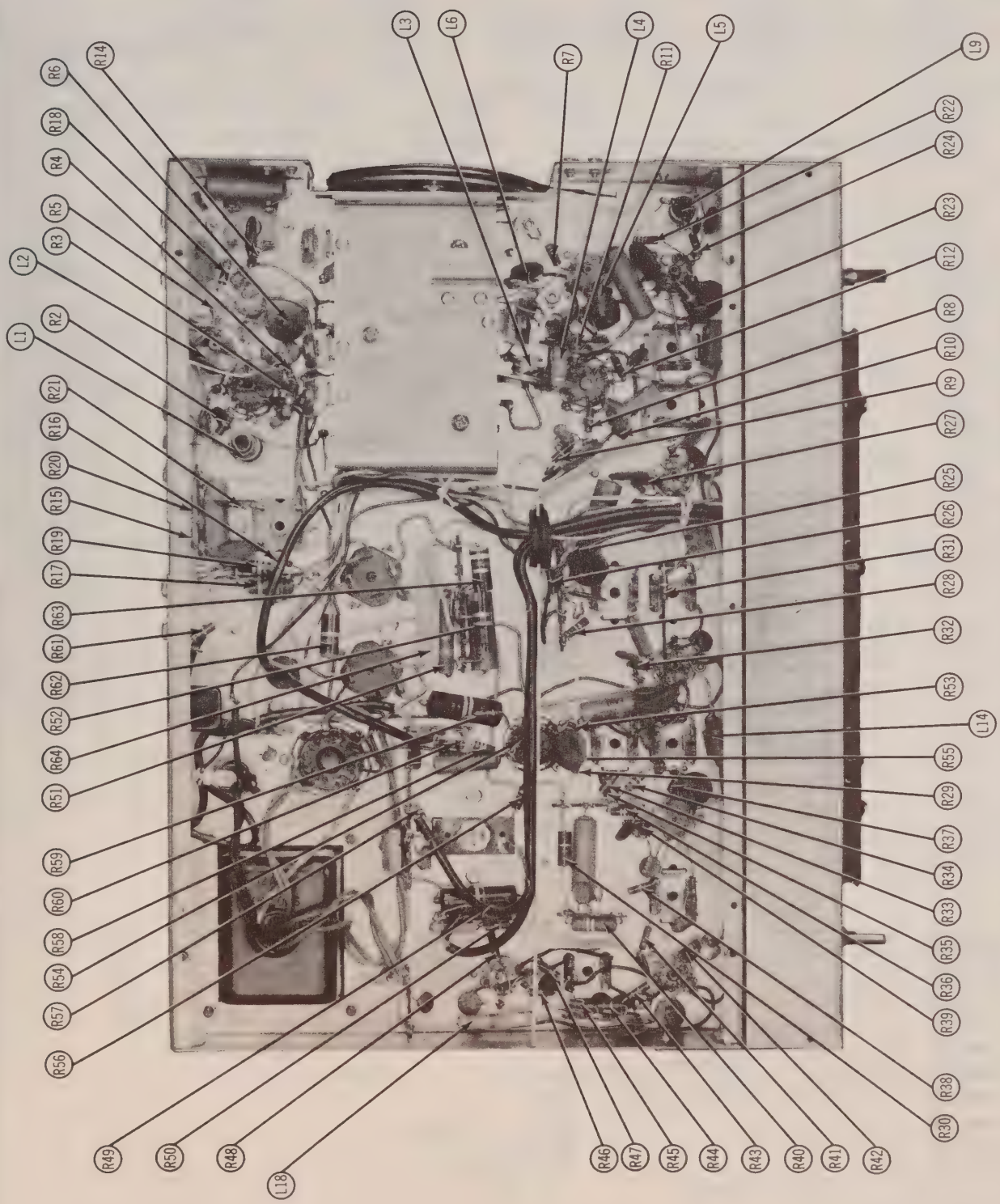
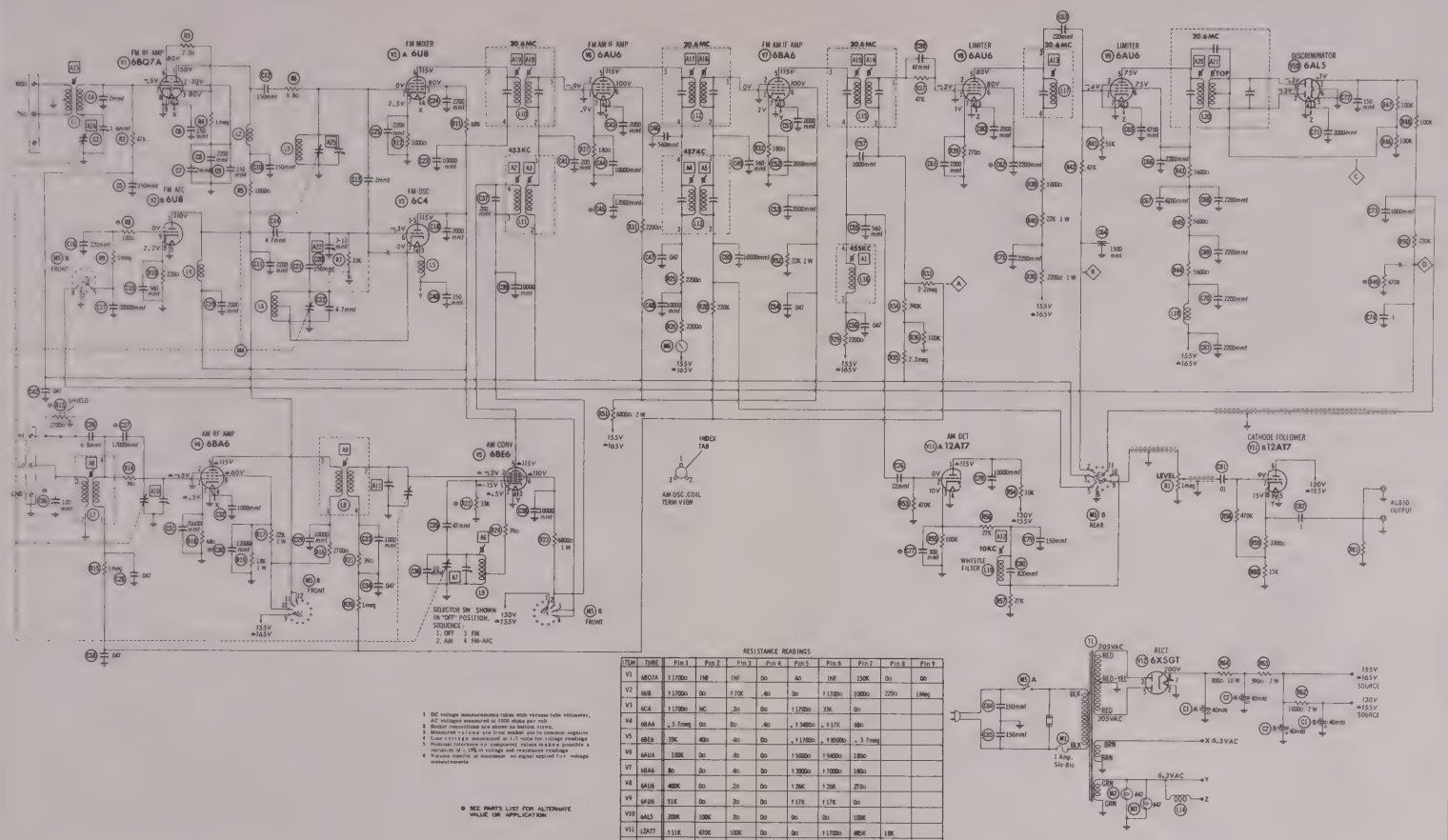


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

OF
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7A	↑17000Ω	1MF	1MF	0Ω	4Ω	1MF	150K	0Ω	0Ω
V2	6U8	↑17000Ω	0Ω	↑7K	4Ω	0Ω	↑17000Ω	10000Ω	220Ω	1Meg
V3	6C4	↑17000Ω	NC	2Ω	0Ω	↑17000Ω	33K	0Ω		
V4	6BA6	↓3.7meg	0Ω	0Ω	4Ω	↓ 34000Ω	↓ 17K	68Ω		
V5	6BE6	33K	40Ω	4Ω	0Ω	↑17000Ω	↓ 85000Ω	↓ 3.7meg		
V6	6AU6	100K	0Ω	4Ω	0Ω	↑5000Ω	↑9400Ω	180Ω		
V7	6BA6	8Ω	0Ω	4Ω	0Ω	↑3000Ω	↑7000Ω	180Ω		
V8	6AU6	400K	0Ω	2Ω	0Ω	↑26K	↑26K	270Ω		
V9	6AU6	51K	0Ω	2Ω	0Ω	↑17K	↑17K	0Ω		
V10	6AL5	200K	100K	2Ω	0Ω	9Ω	0Ω	100K		
V11	12AT7	↑11K	470K	100K	0Ω	0Ω	↑1700Ω	485K	18K	
V12	6X5GT	TP	0Ω	110Ω	NC	110Ω	NC	4Ω	30K	

1 DC voltage measurements taken with vacuum tube voltmeter, 20K ohms per volt.
2 AC voltages measured at 1000 ohms per volt.
3 Measurements are from socket pin to common negative.
4 Measurements are from socket pin to common negative.
5 Low voltage measured at 1.7 volts for voltage readings
6 Minimum tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings
7 Volume control at maximum - no signal applied for voltage measurements

⊕ SEE PART'S LIST FOR ALTERNATE VALUE OR APPLICATION

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.
"Level Set" control to maximum clockwise position.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 6BE6 (V5). Low side to chassis.	455KC (400∿ Mod)	AM	Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	453KC	"	"	"	A2, A3	"
3.	"	"	457KC	"	"	"	A4, A5	"
4.	220MMF	High side thru 220MMF to "LO" input. Low side to chassis.	600KC	"	600KC	"	A6	"
5.	"	"	1500KC	"	1500KC	"	A7	Adjust for maximum deflection. Repeat steps 4 and 5.
6.	"	"	600KC	"	600KC	"	A8, A9	Adjust for maximum deflection.
7.	"	"	1500KC	"	1500KC	"	A10, A11	"

10KC WHISTLE FILTER ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
8.	.1MFD	High side to pin 3 (cathode) of 12AT7 (V11). Low side to chassis.	10KC	AM	1500KC	Vert. amp. to audio output jack. Low side to chassis.	A12	Adjust for MINIMUM amplitude.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	100MMF	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	20.6MC (unmod)	FM (AFC off)	Point of non-interference.	DC probe to point Ⓑ. Common to chassis.	A13, A14, A15, A16, A17, A18, A19	Adjust for maximum deflection.
10.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A20	"
11.	"	"	"	"	"	DC probe to point Ⓓ. Common to chassis.	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

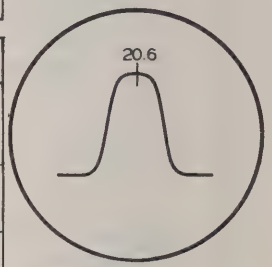


FIG. 1

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
9.	100MMF	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	20.6MC (450KC Swp)	FM (AFC off)	Point of non-interference.	Vert. amp. to point Ⓑ. Common to chassis.	A13, A14, A15, A16, A17, A18, A19	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
10.	"	"	"	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A20	"
11.	"	"	"	"	"	Vert. amp. to point Ⓓ. Low side to chassis.	A21	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A20 for maximum amplitude and straightness of crossover lines.

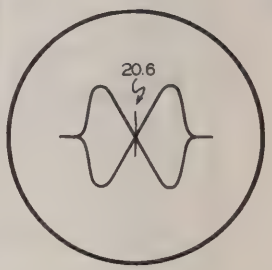


FIG. 2

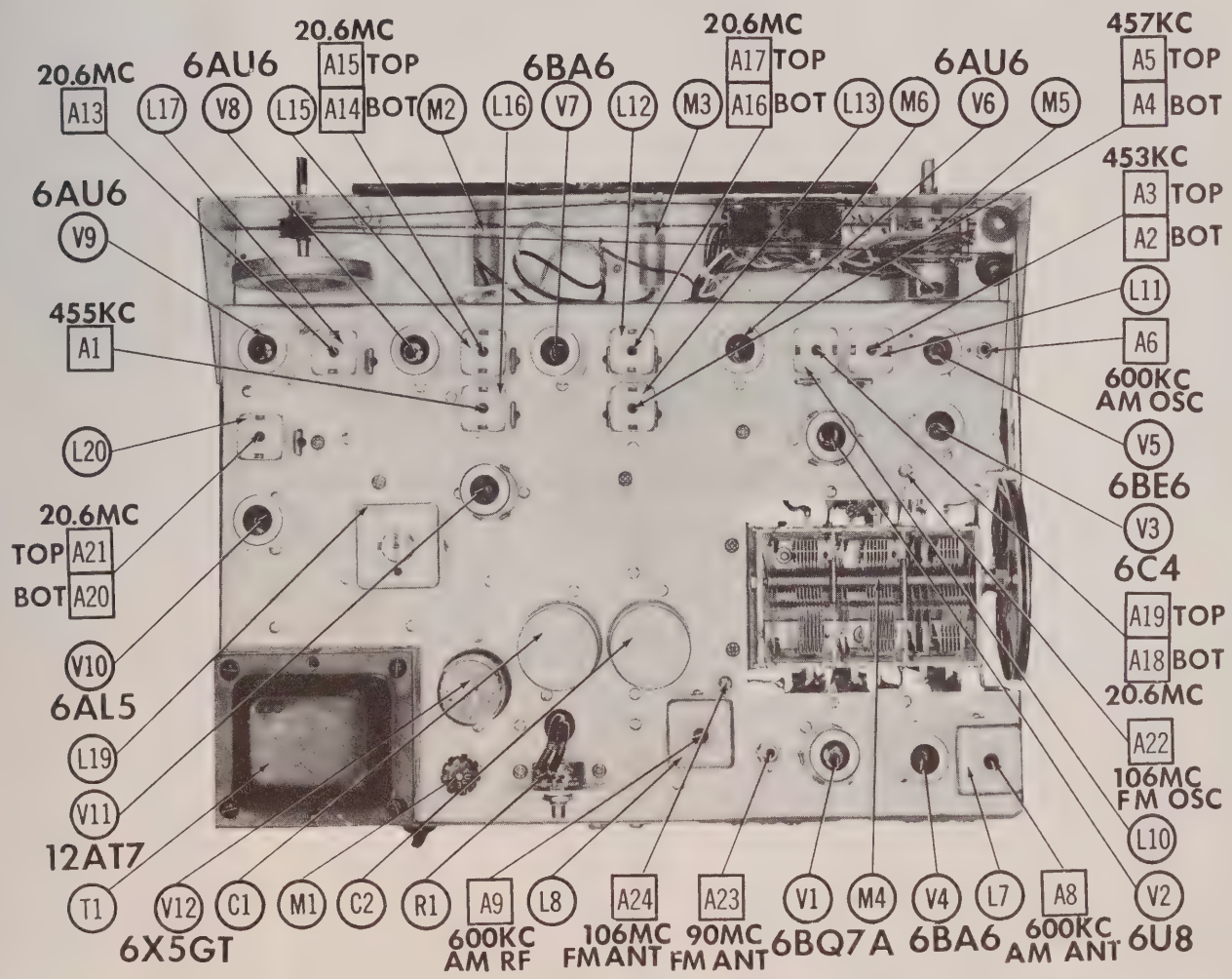
FM RF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	270Ω carbon resistor	High side thru dummy to FM "300" ohm input. Low side to chassis.	90MC	FM (AFC off)	90MC	DC probe to point Ⓑ. Common to chassis.	L6	Adjust for maximum deflection by compressing or expanding coil turns.
13.	"	"	106MC	"	106MC	"	A22	Adjust for maximum deflection.
14.	"	"	90MC	"	90MC	"	A23, L3	Adjust A23 and L3 (L3 by compressing or expanding coil turns) for maximum deflection.
15.	"	"	106MC	"	106MC	"	A24, A25	Adjust for maximum deflection.

FM RF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
12.	270Ω carbon resistor	High side thru dummy to FM "300" ohm input. Low side to chassis.	90MC	FM (AFC off)	90MC	Vert. amp. to point Ⓑ. Low side to chassis.	L6	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1. by compressing or expanding coil turns.
13.	"	"	106MC	"	106MC	"	A22	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
14.	"	"	90MC	"	90MC	"	A23, L3	Adjust A23 and L3 (L3 by compressing or expanding coil turns) for curve of maximum amplitude and symmetry similar to Fig. 1.
15.	"	"	106MC	"	106MC	"	A24, A25	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Craftsmen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C76	22			SI 22	D6-220	G024	ED-22	UC-5422	5GA-Q22	
C77	300			SI 300	D6-301	G055	ED-300	UC-533	5GA-T3	Note 2
C78	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C79	150			SI 150	D6-151	TP36	GP-150	UC-5315	5GA-T15	
C80	820	500		1464-00082		1R5T82			MS-382	
C81	.01	400		BPD-01	D6-103	CUB4S1	GP-10000	PT411	4TM-S1	
C82	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C83	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C84	150			BPD-00015	DD-151	G046	ED-150	UC-5315	5GA-T15	
C85	150			BPD-00015	DD-151	G046	ED-150	UC-5315	5GA-T15	
C86	100			NP0-S1100	D6-101	22R5T1	ED-100	MCB235	MS-31	Note 4

Note 1: Some versions may use 10000MMF in this application.
Note 2: Some versions may use 330MMF in this application.
Note 3: Some versions may use .02MFD in this application.
Note 4: Not used in early versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Craftsmen PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A B	1Meg Shaft	½	26S062	AB-70 AK-1	A47-1Meg-Z			Level Set Attach to R1A

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Craftsmen PART No.	IRC PART No.	NOTES
R2	47K			BTS-47K	
R3	2.2Ω		RXE22*KA	BW½-2.2	
R4	1Meg			BTS-1Meg	
R5	1000Ω			BTS-1000	
R6	6.8Ω				
R7	33K			BTS-33K	
R8	100Ω			BTS-100	Note 3
R9	1Meg			BTS-1Meg	
R10	220Ω			BTS-220	
R11	68K			BTS-68K	
R12	1000Ω			BTS-1000	
R13	2700Ω			BTS-2700	Note 2
R14	39Ω			BTS-39	
R15	1Meg			BTS-1Meg	
R16	2700Ω			BTS-2700	
R17	22K	1		BTA-22K	
R18	68Ω			BTS-68	
R19	18K	1		BTA-18K	
R20	1Meg			BTS-1Meg	
R21	39Ω			BTS-39	
R22	33K			BTS-33K	Note 1
R23	6800Ω	1		BTA-6800	
R24	39Ω			BTS-39	
R25	2200Ω			BTS-2200	
R26	2200Ω			BTS-2200	
R27	180Ω			BTS-180	
R28	220K			BTS-220K	
R29	2200Ω			BTS-2200	
R30	2200Ω	1		BTA-2200	
R31	2200Ω			BTS-2200	
R32	180Ω			BTS-180	
R33	2.2Meg			BTS-2.2Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Craftsmen PART No.	IRC PART No.	NOTES
R34	390K			BTS-390K	
R35	2.2Meg			BTS-2.2Meg	
R36	100K			BTS-100K	
R37	47K			BTS-47K	
R38	1000Ω			BTS-1000	
R39	270Ω			BTS-270	
R40	22K	1		BTA-22K	
R41	51K 5%			BTS-51K 5%	
R42	47K			BTS-47K	
R43	5600Ω			BTS-5600	
R44	5600Ω			BTS-5600	
R45	5600Ω			BTS-5600	
R46	100K 5%			BTS-100K 5%	
R47	100K 5%			BTS-100K 5%	
R48	100K 5%			BTS-100K 5%	
R49	470K			BTS-470K	Note 2
R50	220K			BTS-220K	
R51	6800Ω	2		BTB-6800	
R52	22K	2		BTB-22K	
R53	470K			BTS-470K	
R54	10K			BTS-10K	
R55	100K			BTS-100K	
R56	27K			BTS-27K	
R57	27K			BTS-27K	
R58	470K			BTS-470K	
R59	3300Ω			BTS-3300	
R60	15K			BTS-15K	
R61	1Meg			BTS-1Meg	
R62	1000Ω	2		BTB-1000	
R63	390Ω	2		BTB-390	
R64	300Ω	10	RZM301KA	PW10-300	

Note 1: A 33K is used in some versions.
Note 2: Not used in some versions.
Note 3: A 330Ω is used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Craftsmen PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ② .47A	400VCT ② .065 ADC	6.3VAC ② 2.4A	6.3VAC ② 1.8A	52A033					

ENGLEWOOD, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

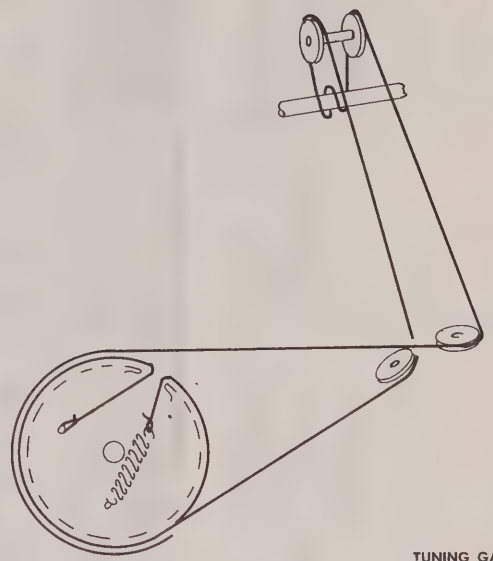
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Craftsmen PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω*	0Ω	51A012				*Tapped
L2	RF Choke	3Ω		53A046				3.3 Microhenries; IRC part #CLA
L3	FM RF Coil	0Ω		51A014				
L4	RF Choke	3Ω		53A046				3.3 Microhenries; IRC part #CLA
L5	Fil. Choke	0Ω		53A091	19-1001		4604	1.5 Microhenries
L6	FM Osc. Coil	0Ω		51A016				Tapped
L7	AM Ant. Coil	.1Ω	5.2Ω	51A011	14-1026			
L8	AM RF Coil	120Ω	5.2Ω	51A017	14-1027			
L9	AM Osc. Coil	4.2Ω		51A015	14-1055		70-Osc.	Tapped @ .5Ω
L10	1st FM IF	.2Ω	.2Ω	50A031				
L11	1st AM IF	10Ω	10Ω	50A035				
L12	2nd FM IF	.2Ω	.2Ω	50A031				
L13	2nd AM IF	8.5Ω	8.5Ω	50A032				
L14	Fil. Choke	0Ω		53S059	19-1003			4.6 Microhenries
L15	3rd FM IF	.2Ω	.2Ω	50A031				
L16	3rd AM IF	6.8Ω		50A033				
L17	FM Limiter	.2Ω		50A031				
L18	RF Choke	6.1Ω		53X090				8.2 Microhenries; IRC part #CL-1
L19	10KC Filter	650Ω		41A023				
L20	Discriminator	.1Ω	.2ΩCT	50A034				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Craftsmen PART No. FUSE	Craftsmen PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	1A 125V	39X019		31300l. (3AG-S/B-1A)	342003	MDL 1	HKP

MISCELLANEOUS

ITEM No.	PART NAME	Craftsmen PART No.	NOTES
M2	Pilot Light	39X005	#47
M3	Pilot Light	39X005	#47
M4	Tuning Cap.	CAX-2	6 Gang (AM Sections: 11-320MMF, 11-320MMF, 10-180MMF)
M5A	Switch	SW-36	Power (On-Off) SPST
B	Switch		Selector (Rotary, Wafer Type)
M6	Meter	ME-33	Tuning
A7	Trimmer Cap.	CVX-2	AM Osc. Trimmer (4-20MMF)
A11	Trimmer Cap.	CVX-2	AM RF Trimmer (4-20MMF)
A10	Trimmer Cap.	CVX-2	AM Ant. Trimmer (4-20MMF)
A25	Trimmer Cap.	CVX-2	FM RF Trimmer (4-20MMF)
	Knob	N-10	Selector & Tuning
	Dial Glass	1N-62	
	Dial Pointer	82A009	



TUNING GANG FULLY CLOSED

DIAL CORD STRINGING

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6BQ7A	
V2	FM Mixer-AFC	6U8	
V3	FM Oscillator	6C4	
V4	AM RF Amplifier	6BA6	
V5	AM Converter	6BE6	
V6	1st FM-AM IF Amp.	6AU6	
V7	2nd FM-AM IF Amp.	6BA6	
V8	1st FM Limiter	6AU6	
V9	2nd FM Limiter	6AU6	
V10	Discriminator	6AL5	
V11	AM Det-Cathode Follower	12AT7	
V12	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Craftsmen PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	250	CEX-2	AFHS3-94	D0016	FP320		T-350	TVL-4578
B	▲40	250						MT-2520	
C2A	▲40	250	CEX-2	AFHS3-94	D0016	FP320		T-350	TVL-4578
B	▲40	250						MT-2520	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Craftsmen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	1-6		CKX-1		829-6					
C4	2			NP0-SI2. 2	TCZ-2R2	TZ05	TCO-2. 2		5TCCB-V22	
C5	150			SI 150	D6-151	TP36	GP-150	UC-5315	5GA-T15	
C6	150			SI 150	D6-151	TP36	GP-150	UC-5315	5GA-T15	
C7	2			NP0-SI2. 2	TCZ-2R2	TZ05	TCO-2. 2		5TCCB-V22	
C8	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C9	150			SI 150	D6-151	TP36	GP-150	UC-5315	5GA-T15	
C10	150			SI 150	D6-151	TP36	GP-150	UC-5315	5GA-T15	
C11	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C12	150			SI 150	D6-151	TP36	GP-150	UC-5315	5GA-T15	
C13	2			NP0-SI2. 2	TCZ-2R2	TZ05	TCO-2. 2		5TCCB-V22	
C14	4. 7			NP0-DI4. 7	TCZ-4R7	Z010	TCO-4. 7	ZT-555	5TCCB-V47	
C15	560	500		1469-00056		5R5T56			MS-356	
C16	220			SI220	D6-221	TP39	GP-220	UC-5322	5GA-T22	
C17	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C18	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C19	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C20	3-12		CKX-2							
C21	150			N750-DI150	TCN-150	N046	TC7-150		5TCU-T15	
C22	4. 7			N750-SI5	TCN-5	N011	TC7-5	NT-555	5TCUB-V5	
C23	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C24	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C25	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C26	6. 8			NP0-DI6. 8	TCZ-6R8	Z013	TCO-6. 8	ZT-5568	5TCCB-V68	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Craftsmen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C27	12000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	Note 1
C28	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C29	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C30	12000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	Note 1
C31	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C32	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C33	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C34	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C35	47			BPD-000047	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C36	10			SI 10	D6-100	TP09	GP-10	UC-541	5GA-Q1	
C37	200	500		1469-0002		5R5T2		MCE235	MS-32	
C38	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C39	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C40	150			SI 150	D6-151	TP36	GP-150	UC-5315	5GA-T15	
C41	200	500		1469-0002	TCZ-200	5R5T2	TCO-200	MCE237	MS-32	
C42	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C43	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C44	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C45	12000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	Note 1
C46	560	500		1464-00056		1R5T56			MS-356	
C47	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C48	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C49	560	500		1464-00056		1R5T56			MS-356	
C50	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C51	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C52	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C53	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C54	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C55	560	500		1469-00056		1R5T56			MS-356	
C56	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C57	1000			SI 1000	D6-102	TP52	GP-1000	UC-521	5HK-D1	
C58	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C59	47			SI 47	D6-470	G033	ED-47	UC-5447	5GA-Q47	
C60	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C61	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C62	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	Note 3
C63	220			SI 220	D6-221	TP39	GP-220	UC-5322	5GA-T22	
C64	1500		CBX-1						503C-D15	
C65	4700			BPD-0047	DD-472	K079	ED-0047	DC525	5HK-D47	
C66	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C67	4700			BPD-0047	DD-472	K079	ED-0047	DC525	5HK-D47	
C68	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C69	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C70	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	
C71	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C72	150			SI 150	D6-151	TP36	GP-150	UC-5315	5GA-T15	
C73	1000	500		1464-001		1R5D1		MCE255	MS-21	
C74	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C75	2200			BPD-0022	DD-222	K073	ED-0022	DC522	5HK-D22	

DEWALD MODEL K-545

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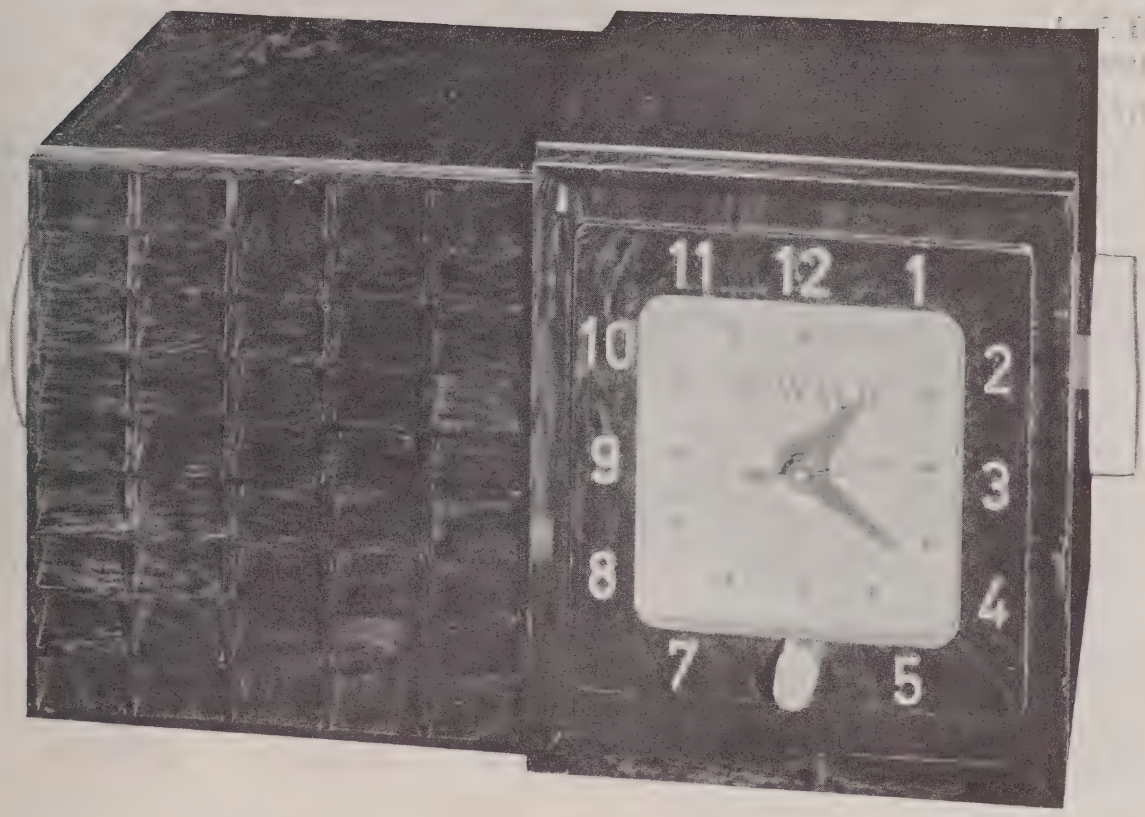
[illegible] COLORADO



DEWALD MODEL K-545

DEWALD MODEL K-545

TRADE NAME	Dewald Model K-545
MANUFACTURER	Dewald Radio Mfg. Co., 35-15 37th. Ave., Long Island City, 1, N.Y.
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12AU6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC - 1660KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400∿Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	"	1660KC	"	"	A3	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

DEWALD MODEL K-545

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12AU6	
V3	Det.-AVC-AF Amplifier	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DEWALD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	30	150	E-205A-5	PRS150V3030	BBRD3315	TCD47	TDLD-4	FMD-1530	TVA-2434
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	DEWALD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C3	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	Note 1
C4	120			N750-S120	TCN-120	N044	TC7-120			
C5	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C6	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C7	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	

Note 1. Not used in some chassis.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DEWALD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2Meg	½	3046-5	AB-76	A47-2Meg-Z	Q13-139	U55	Volume
B	Shaft			AK-4	KSS-3			Attach to R1A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

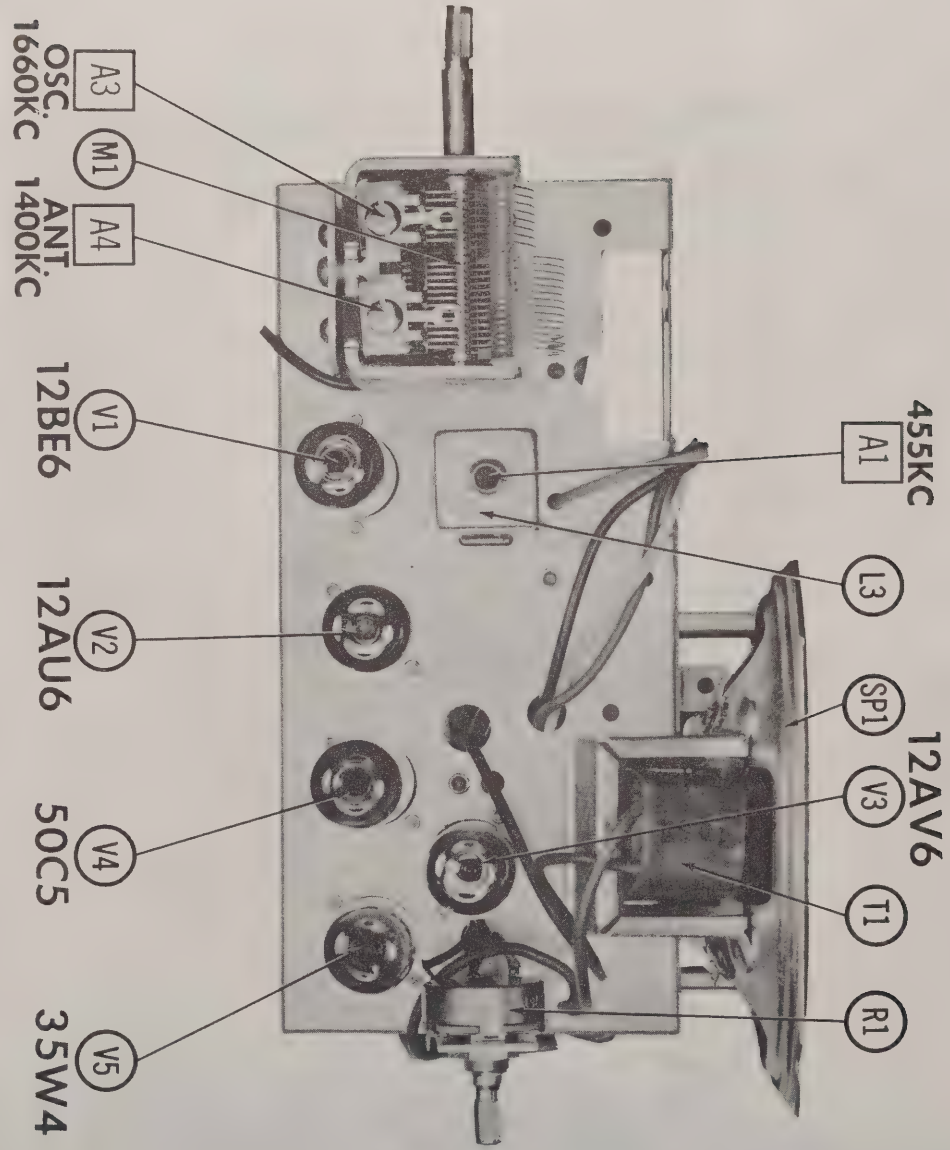
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	DEWALD PART No.	IRC PART No.	
R2	22K			BTS-22K	
R3	2700Ω			BTS-2700	
R4	12K			BTS-12K	
R5	3.3Meg			BTS-3.3Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	DEWALD PART No.	IRC PART No.	
R6	100K			BTS-100K	
R7	150Ω			BTS-150	
R8	1500Ω	1		BTA-1500	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DEWALD PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3150Ω	3-4Ω	Part of Spkr. 7003C-9	Z1101	A-3025	A-3332	26S58	S-12X	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	DEWALD PART No.	QUAM PART No.	RCA TYPE No.	
SP1	4"	PM	3-4Ω	7003C-9	4A07	223S1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	DEWALD PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	.5Ω		1156F-6				
L2	Osc. Coil	.9Ω	11.5Ω	1154D-5				
L3	IF Trans.	25Ω	25Ω	1091C-7	16-6758	BC-353	12-C1	

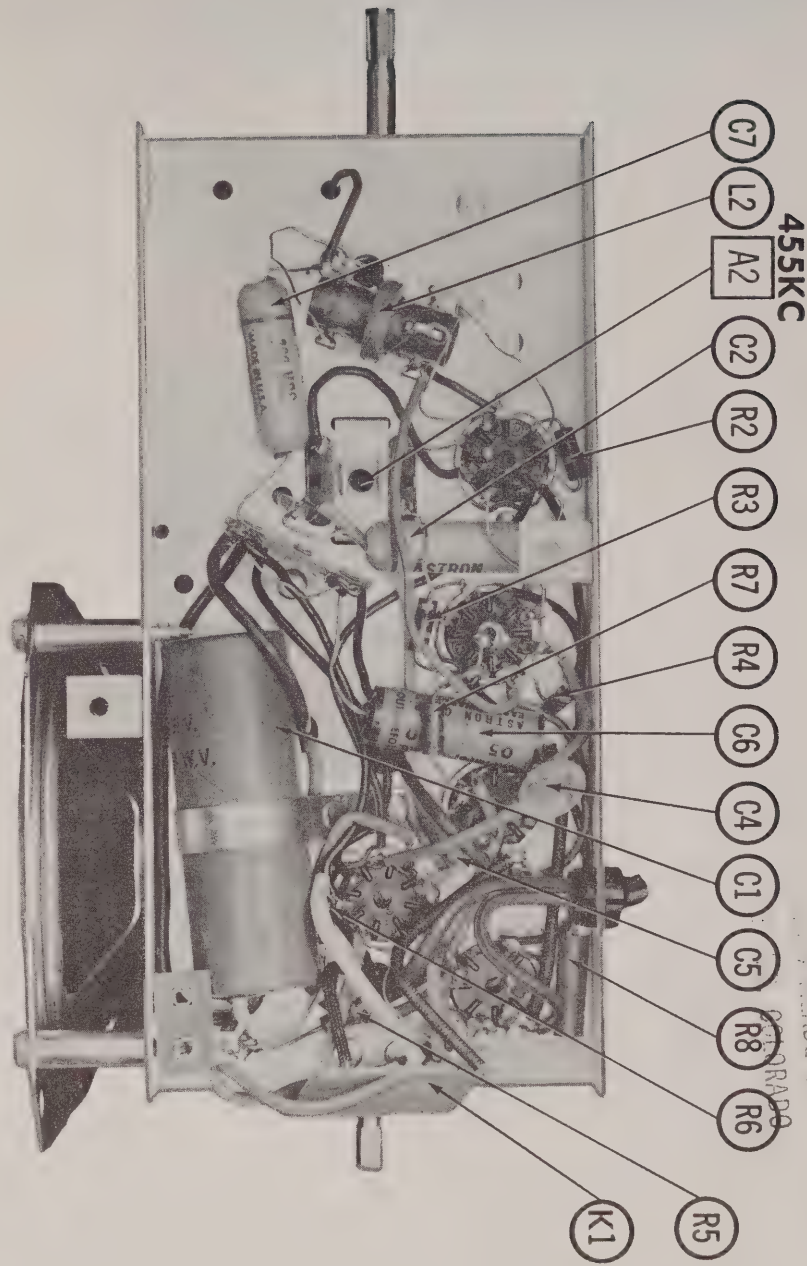
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DEWALD PART No.	REPLACEMENT DATA	
K1	Audio Couplate	6.8Meg, 470K, 470K, 220MMF, 250MMF, 5000MMF, 5000MMF	2069	Aervox Cornell-Dubilier Centralab Erie Sprague	PA-113-2 116TM2 PC-151 1408-02 DT-2

MISCELLANEOUS

ITEM No.	PART NAME	DEWALD PART No.	NOTES
M1	Tuning Cap.	V-217-1	2 Gang (27-385MMF, 13-105MMF)
M2	Clock	C-820	
	Cabinet	C443	
	Knob	4228D-12	Tuning
	Knob	4228D-13	Volume

CHASSIS—BOTTOM VIEW



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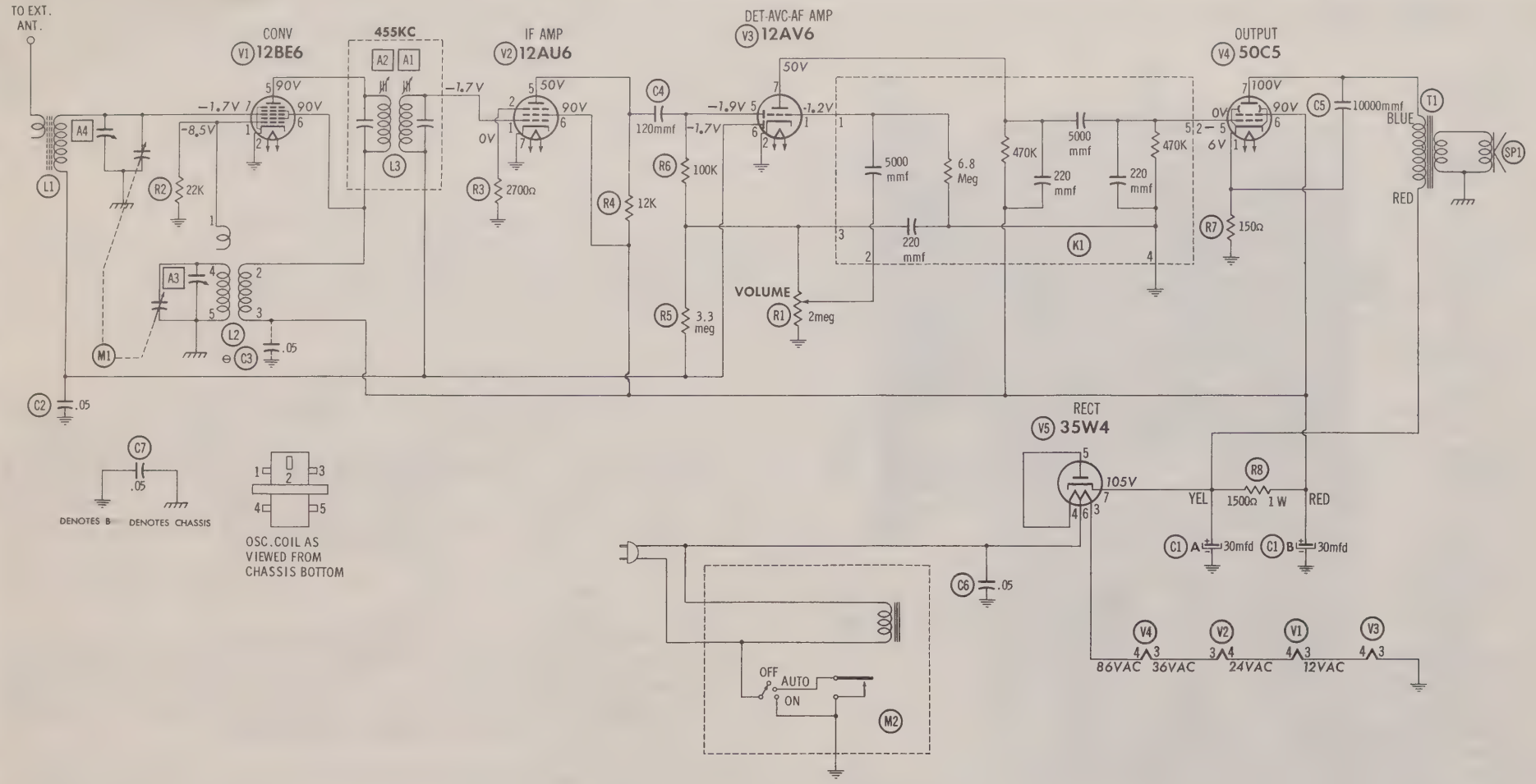
DENVER, COLORADO
DEWALD
MODEL K-545

DEWALD
MODEL K-545



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	0Ω	12Ω	24Ω	†1500Ω	†1500Ω	5.3Meg
V2	12AU6	5.3Meg	2700Ω	36Ω	24Ω	†13.5K	†1500Ω	0Ω
V3	12AV6	6.8Meg	0Ω	0Ω	12Ω	2Meg	5.3 Meg	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1500Ω	†145Ω
V5	35W4	TP	NC	86Ω	125Ω	125Ω	118Ω	23K

† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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FIRESTONE
MODEL 4-C-30 (Code 297-6-516)

[illegible]
[illegible] ANKENSHIP
[illegible] MEADE ST.
[illegible], COLORADO

FIRESTONE
MODEL 4-C-30 (Code 297-6-516)

FIRESTONE
MODEL 4-C-30 (Code 297-6-516)

TRADE NAME	Firestone Model 4-C-30 (Code 297-6-516)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Pkwy., Akron, Ohio
TYPE SET	Three Power Portable 2 Band AM Receiver
TUBES (Five)	Types 1U4 RF Amplifier, 1L6 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY RATING	100-120 Volts AC-DC (or) 9 Volt "A" Supply & 90 Volt "B" Supply in Pack Form .1 Amp. @ 117 Volts AC (or) 55MA @ 9 Volts DC & 9.5MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540KC - 1620KC SHORT WAVE 5.8MC - 18.3MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1L6 (V2). Low side to B-.	455KC (400%Mod)	BC	Point of non-interference	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
	Check for image frequency by setting signal generator to approximately 19.3MC and increasing generated signal. If signal fails to appear, reset signal generator to 18.4MC and decrease capacity of A5 until signal is received. Recheck for image.							
2.	"	"	18.4MC	SW	Tuning gang fully open	"	A5	Set A6 and A7 for maximum capacity. Adjust A5 for maximum output using peak signal obtained with trimmer screw farthest out of trimmer.
3.		Loop	15MC	SW	15MC	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1620KC	BC	Tuning gang fully open	"	A8	"
5.		"	1400KC	"	1400KC	"	A9, A10	"
6.		"	600KC	"	600KC	"	All	Adjust for maximum output while rocking tuning gang. Repeat steps 4, 5 and 6.

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	1U4	
V2	Converter	1L6	
V3	IF Amplifier	1U4	

ITEM No.	USE	TYPE	NOTES
V4	Det.-AVC-AF Amp.	1U5	
V5	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▬50	150	R-1095	AFH4-38	D0330	FP411	TMQ-37	Q-110	TVL-4425.3
B	■40	150							
C	▲40	150							
D	100	15							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

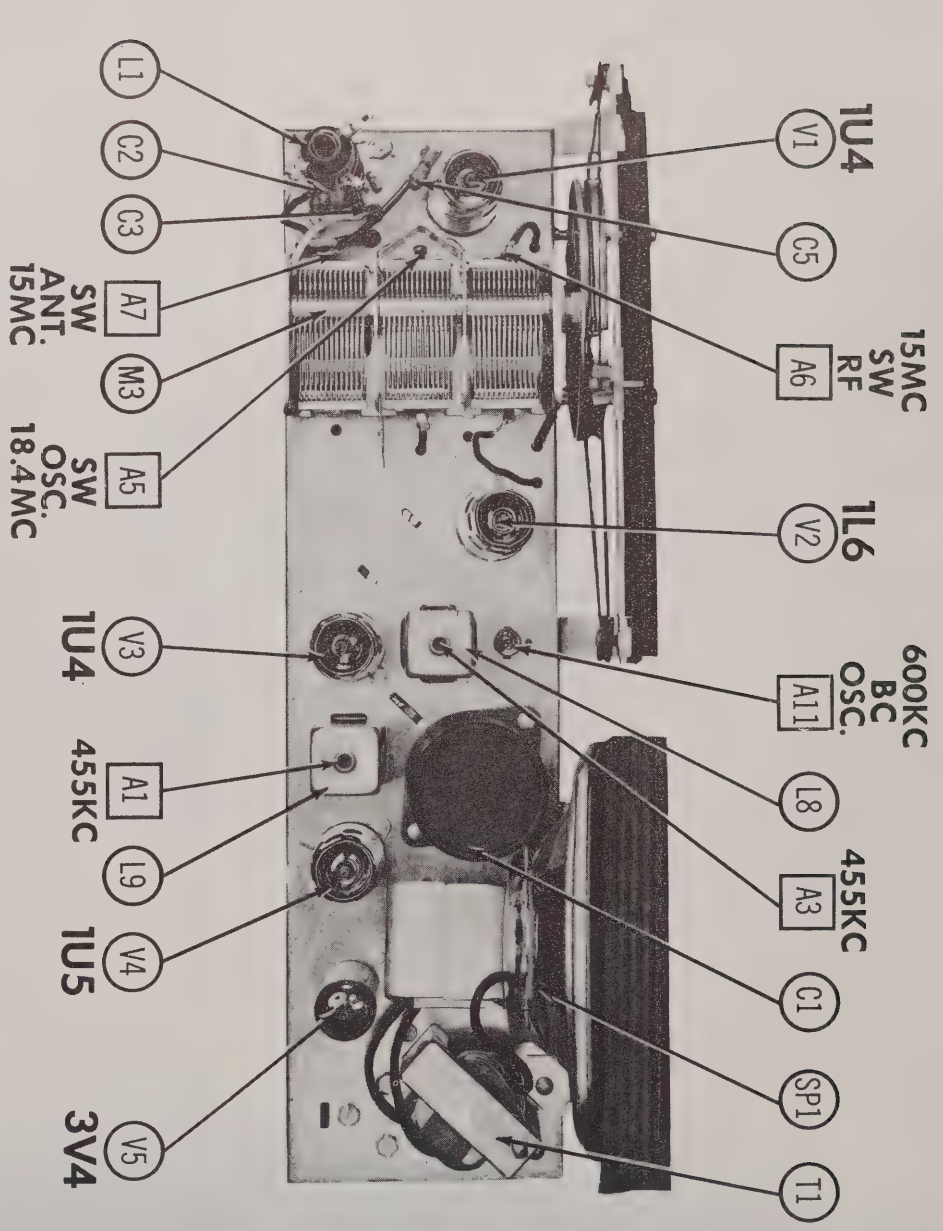
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	3			NP0-SI3	TCZ-3R3	TZ06	NP0A-030	ZT-553	5TCCB-V33	
C3	6.8		R-1271	NP0-SI6.8	TCZ-6R8	TZ08	NP0A-6R8	ZT-5568	5TCCB-V68	
C4	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C5	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C6	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C7	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C8	5000			BPD-005	DD-502	K080	811-005	DC525	5HK-D5	
C9	6.8		R-1271	NP0-SI6.8	TCZ-6R8	TZ08	NP0A-6R8	ZT-5568	5TCCB-V68	
C10	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C11	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C12	.33		R-1154							
C13	50			NP0-SI50	TCZ-50	TZ23	NP0-338-500	ZT-545	5TCC-Q5	
C14	4000	500	N-1690	1464-004		1R5D4		MCE463	MS-24	
C15	575	500	R-1106							
C16	5000			BPD-005	DD-502	K080	811-005	DC525	5HK-D5	
C17	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C18	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C19	2000			BPD-002	DD-202	K072	801-002	DC-522	5HK-D2	
C20	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C21A	150					G046	811-151	UC-5315		
B	2000					K072	801-002	DC522		
C	150		♦R-1119	♦PA-521	♦PC-165	G046	811-151	UC-5315	♦DP-1	
D	10000					K082	811-01	DC511		
E	5000					K080	811-005	DC525		
C22	.05	200		BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C23	2000			BPD-002	DD-202	K072	801-002	DC522	5HK-D2	
C24	2000			BPD-002	DD-202	K072	801-002	DC522	5HK-D2	
C25	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C26	2000			BPD-002	DD-202	K072	801-002	DC522	5HK-D2	
C27	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	

♦ Items C21A, C21B, C21C, C21D, C21E, R17A, R17B, R17C and R17D are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	R-1081	B-70-S	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	Not Req.	SWE-20	76-2	US-27	Attach to R1A
R2A	2Meg	½	R-1082	AB-76	A47-2Meg-Z	Q13-139	U55	Tone
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	FIRESTONE PART No.	IRC PART No.	
R3	47K			BTS-47K	
R4	2.7Meg			BTS-2.7Meg	
R5	3.3Meg			BTS-3.3Meg	
R6	1000Ω			BTS-1000	
R7	1000Ω			BTS-1000	
R8	27K			BTS-27K	
R9	47K			BTS-47K	
R10	180K			BTS-180K	
R11	68K			BTS-68K	
R12	1Meg			BTS-1Meg	
R13	220Ω			BTS-220	
R14	1500Ω			BTS-1500	
R15	1800Ω			BTS-1800	
R16	6.8Meg			BTS-6.8Meg	
R17A	10Meg		♦R-1119	BTS-10Meg	
B	4.7Meg			BTS-4.7Meg	
C	1Meg			BTS-1Meg	
D	3.3Meg			BTS-3.3Meg	
R18	1500Ω			BTS-1500	
R19	100Ω	2.5	R-1152	PW4-100	
R20	82Ω			BTS-82	
R21	470Ω	1		BTA-470	
R22	3300Ω	3	R-1151	PW7-3300	
R23	4700Ω			BTB-4700	

♦ Items R17A, R17B, R17C, R17D, C21A, C21B, C21C, C21D, C21E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	FIRESTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	9200Ω	3.8Ω	R-1080	Z1117	A-2932	A-3879	24S52	S-17X	

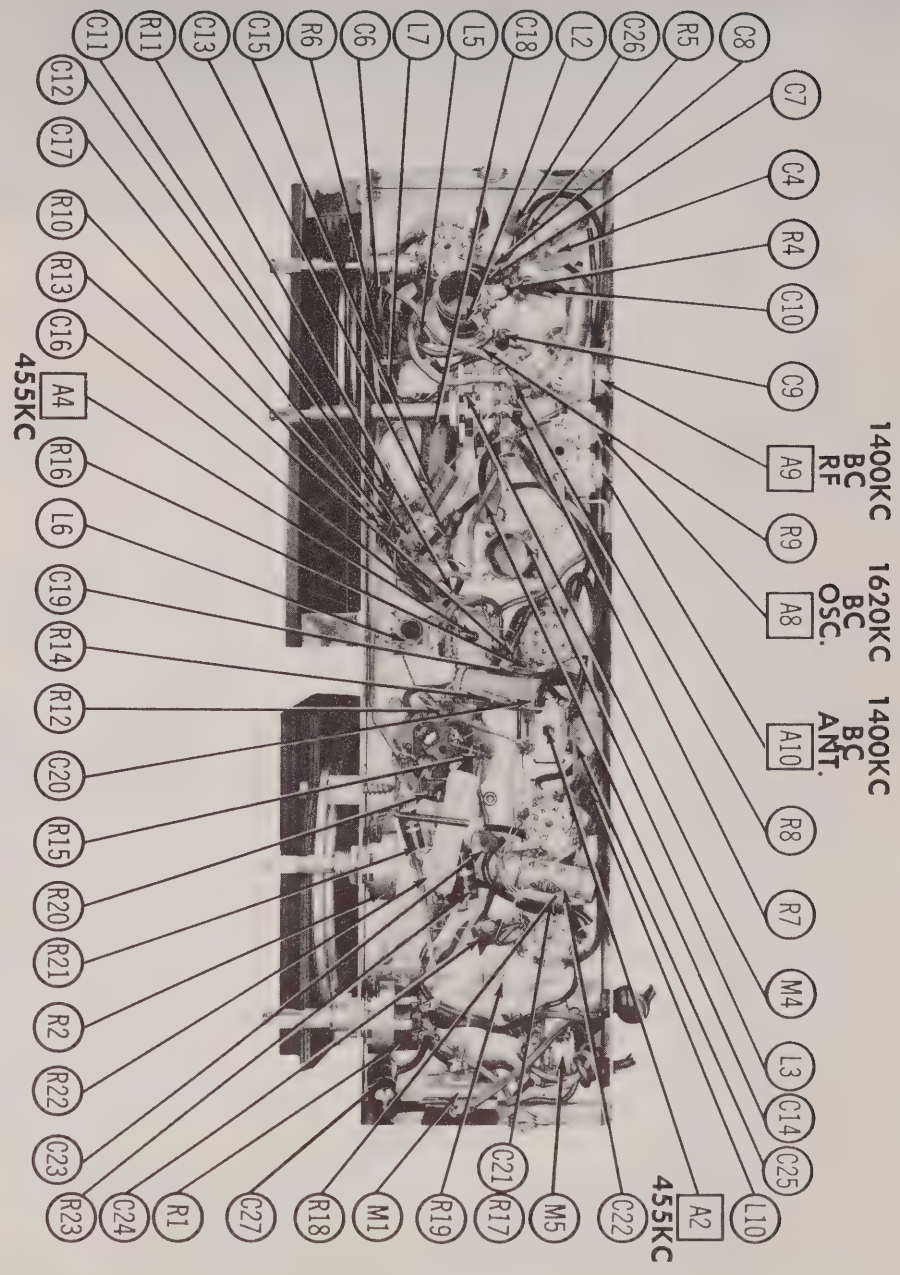
SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	FIRESTONE PART No.	QUAM PART No.	RCA TYPE No.	
SP1	5"	PM	3.8Ω	R-1116	5A1	228S1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	FIRESTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	SW Ant. Coil	5.3Ω	0Ω	R-1097	14-1044			
L2	SW RF Coil	1Ω	0Ω	R-1098	14-1045			
L3	SW Osc. Coil	.5Ω	0Ω	R-1099				
L4	BC Loop Ant.	2Ω		R-1086				Includes cabinet back
L5	BC RF Coil	8.5Ω		R-1101	19-4201		6154	
L6	BC Osc. Coil	.8Ω	2.9Ω	R-1102	14-1040	BC-387	71-OSC	
L7	Fil. Choke	0Ω		R-1172	19-1000		4602	1 Microhenry
L8	Input IF	14Ω	14Ω	N-7981	16-6758	BC-352	12-C1	
L9	Output IF	14Ω	14Ω	N-7981	16-6758	BC-353	12-C2	
L10	RF Choke	0Ω		R-1160				

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

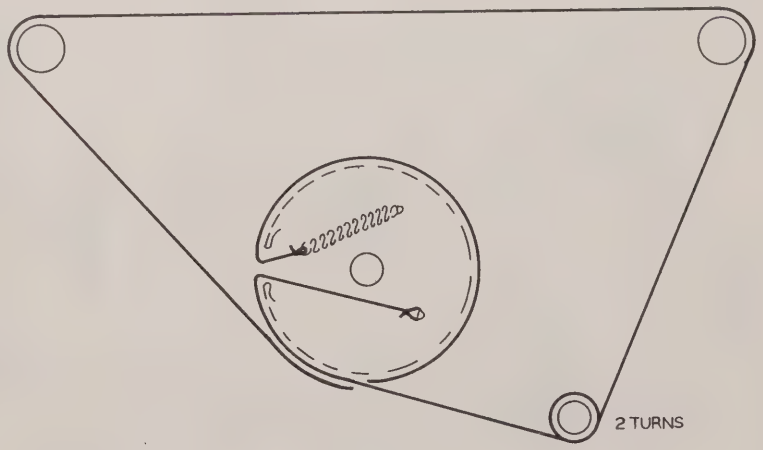
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	FIRESTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.054A	N-8331	1263A	RS065	6S65	8J1	65	

BATTERIES

ITEM No.	VOLTAGE	FIRESTONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V "A" 90V "B"	4-D-138						F6A60	

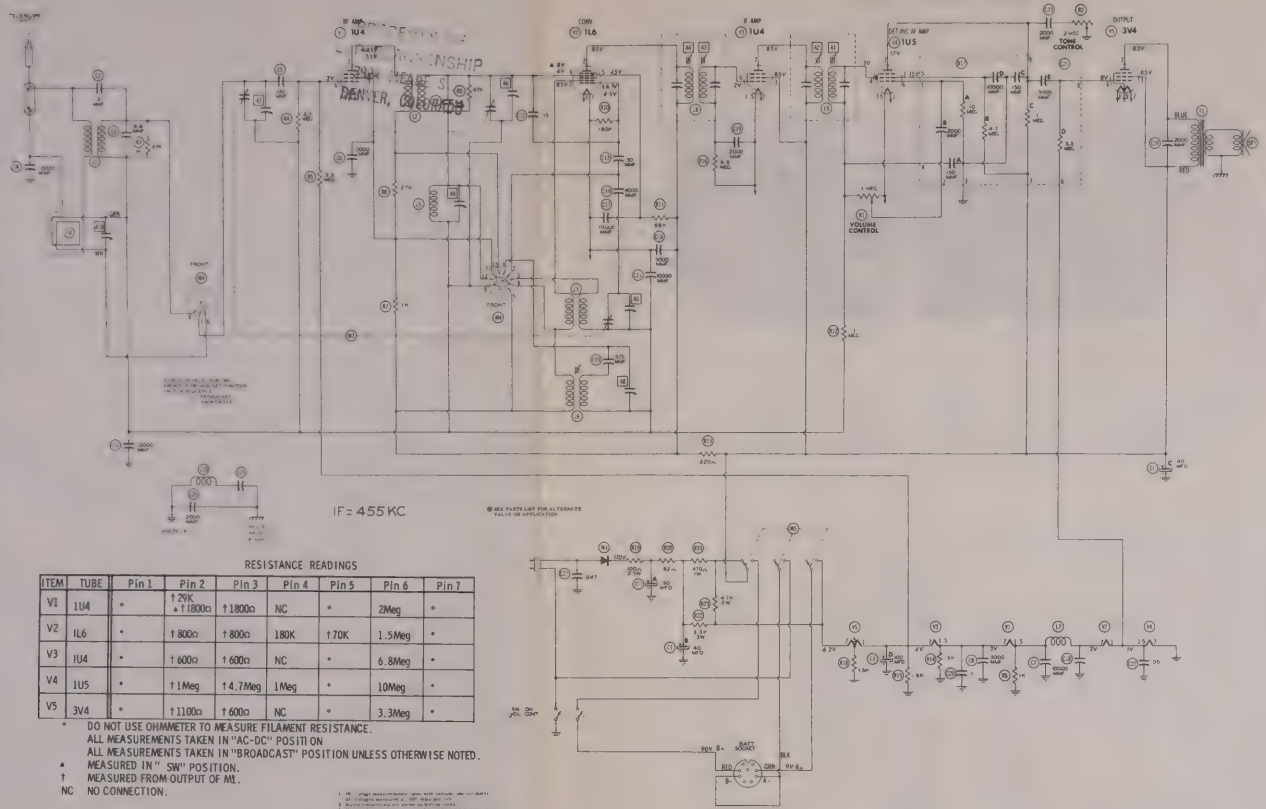
MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	Tuning Cap.	R-1348	3 Gang (16-455MMF, 16-455MMF, 16-455MMF)
M4	Switch	R-1049	Band (Rotary-wafer type)
M5	Switch	R-1103	Power Changeover (3 pole- 2 position)
M6	Trimmer Cap.	R-1083	3 Section: Sw. Osc. (A5), BC Osc. (A8), BC RF (A9).
	Antenna	R-1120	Telescope
	Cabinet	#516	
	Knob	R-1354	On-off-volume
	Knob	R-1355	Tuning, tone, bandswitch



TUNING GANG FULLY CLOSED

DIAL CORD STRINGING



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1U4	*	↑29K ▲↑1800Ω	↑1800Ω	NC	*	2Meg	*
V2	1L6	*	↑800Ω	↑800Ω	180K	↑70K	1.5Meg	*
V3	1U4	*	↑600Ω	↑600Ω	NC	*	6.8Meg	*
V4	1U5	*	↑1Meg	↑4.7Meg	1Meg	*	10Meg	*
V5	3V4	*	↑1100Ω	↑600Ω	NC	*	3.3Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
ALL MEASUREMENTS TAKEN IN "AC-DC" POSITION
ALL MEASUREMENTS TAKEN IN "BROADCAST" POSITION UNLESS OTHERWISE NOTED.
▲ MEASURED IN " SW" POSITION.
↑ MEASURED FROM OUTPUT OF Mt.
NC NO CONNECTION.

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*TRADE MARK

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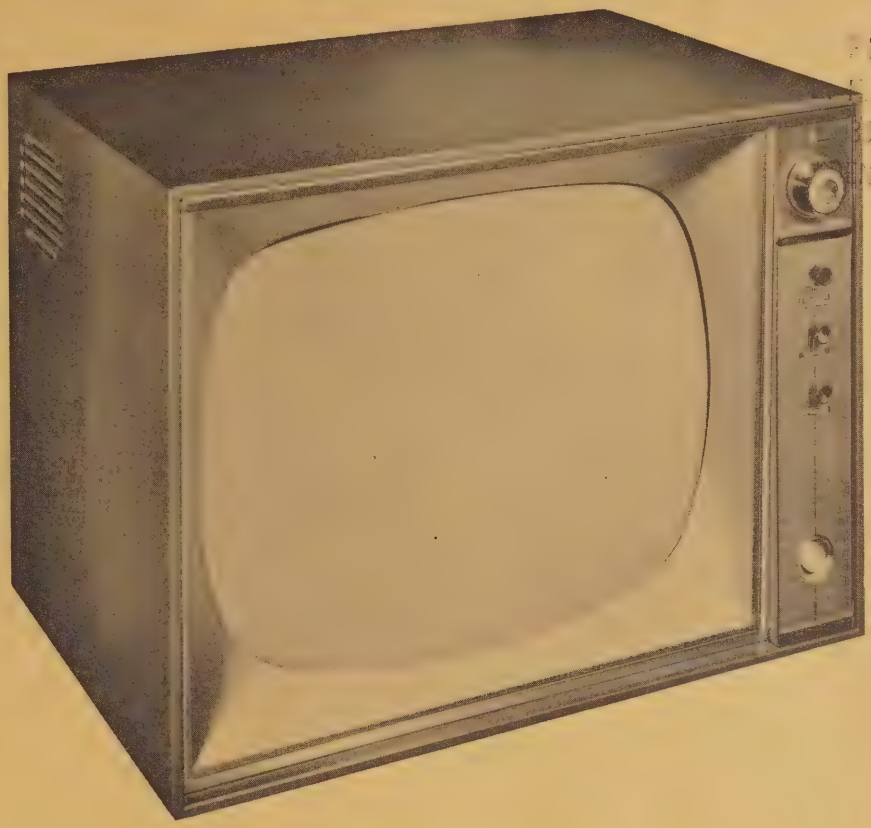

GENERAL ELECTRIC MODEL 21T50 ("U" Line)

TRADE NAME	General Electric	MODELS 21C137, 21C138, 21C160, 21C161, 21C162, 21C172, 21T050, 21T054, 21T055, 21T060, 21T061, 24C182, 24C183 ..... "U" Line
MANUFACTURER	General Electric Co., Applicance & Television Receiver Div., Electronics Park, Syracuse, N.Y.	
TYPE SET	Television Receiver	
TUBES	Seventeen	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 1.62 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

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GENERAL ELECTRIC MODELS 21C137, 21C138, 21C160, 21C161, 21C162, 21C172, 21T050, 21T060, 21T061, 24C182, 24C183 ("U" Line)

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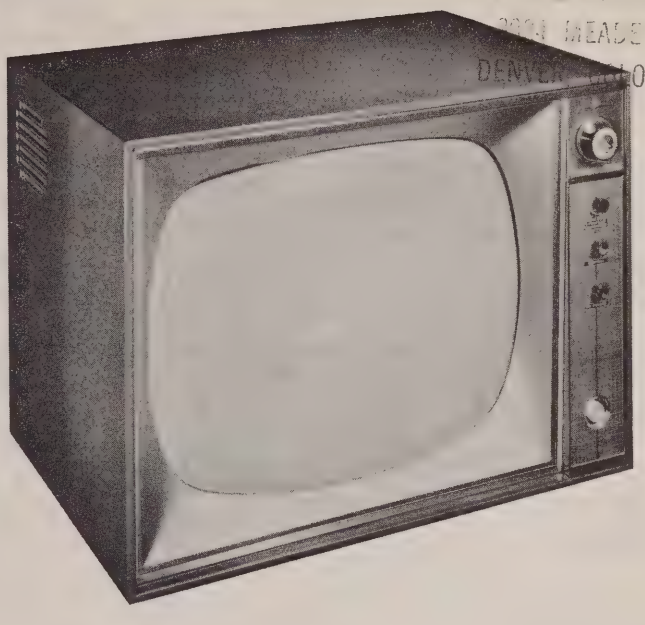
DENVER, COLORADO

DISASSEMBLY INSTRUCTIONS

REMOVAL OF CHASSIS

1. Remove 6 push-on type knobs from front of cabinet.
2. Remove 8 metal screws. Remove rear cover.
3. Remove 4 metal screws holding corner bracket.
4. Remove 2 nuts holding picture tube strap to front of cabinet.
5. Remove 3 chassis bolts from bottom of cabinet.
6. Disconnect speaker plugs.
7. Remove chassis.
8. Remove 4 speaker nuts. Remove speaker.



MODEL

21T050 "U" Line

GENERAL ELECTRIC MODELS 21C137, 21C138, 21C160, 21C161, 21C162, 21C172, 21T050, 21T060, 21T061, 24C182, 24C183 ("U" Line)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove metal screws along bottom of cabinet front. Pull out bottom glass channel and glass. Use extreme caution when removing safety glass.

SERVICE ADJUSTMENT LOCATION

See tube location chart on page 16.

FOCUS ADJUSTMENT

Focus may be varied by means of a jumper on picture tube base. This jumper may be connected between pins 6 and 10 or 6 and 2. The ion trap should again be adjusted for maximum brightness consistent with best focus.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

It will be necessary to remove the rear cover and supply power to the set.

Set the horizontal hold control at its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L26)located on tube side of chassis.

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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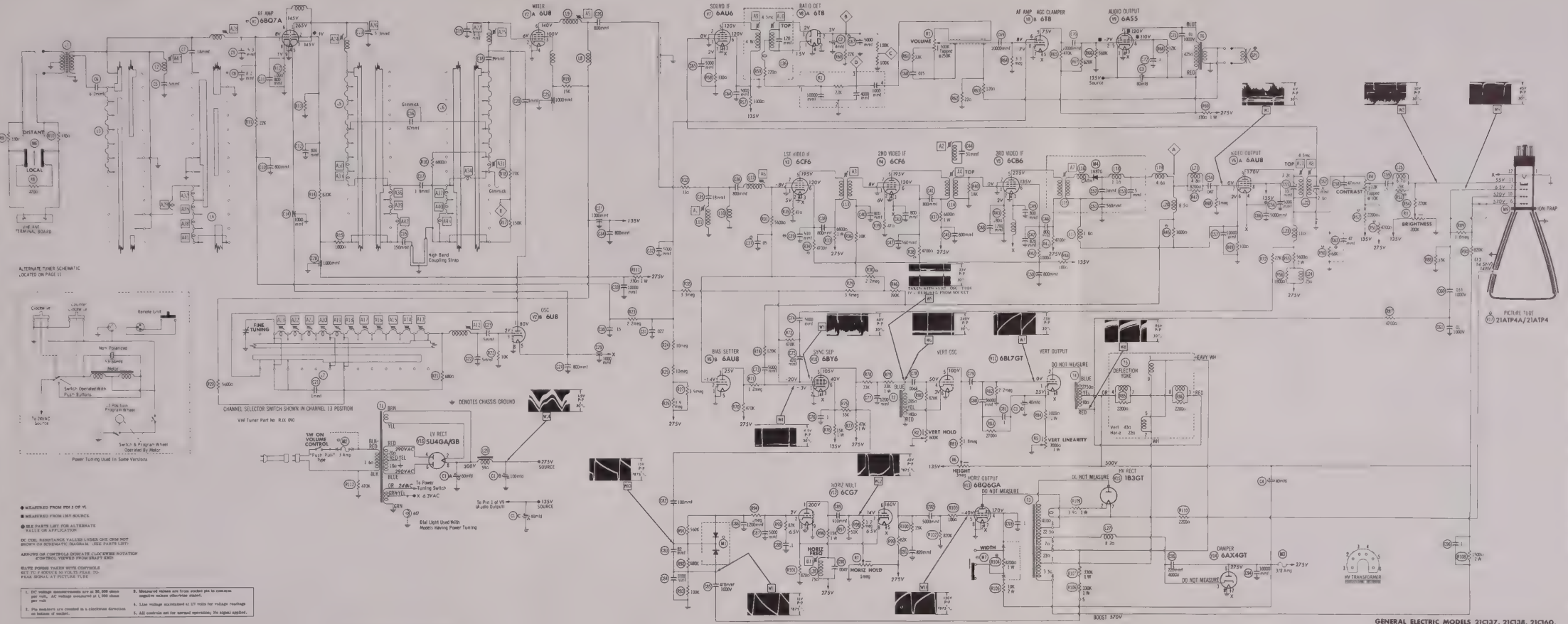
RF AMP V1 6BQ7A
MIXER V2A 6U8
OSC V2B 6U8
SOUND IF V7 6AU6
RATIO DET V8A 6T8
AF AMP AGC CLAMPER V8B 6T8
AUDIO OUTPUT V9 6AS5
1ST VIDEO IF V3 6CF6
2ND VIDEO IF V4 6CF6
3RD VIDEO IF V5 6CB6
VIDEO OUTPUT V6A 6AU8
BIAS SETTER V6B 6AU8
SYNC SEP V10 6BY6
VERT OSC V11 6BL7GT
VERT OUTPUT
HORIZ MULT V13 6CG7
HORIZ OUTPUT V13 6BQ6GA
HV RECT V15 1B3GT
DAMPER V14 6AX4GT
PICTURE TUBE V17 21ATP4A/21ATP4
LV RECT V16 5U4GA/GB
DISTANT
LOCAL
ANT. TERMINAL BOARD
ALTERNATE TUNER SCHEMATIC LOCATED ON PAGE 11
FINE TUNING
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
VHF Tuner Part No RJX 090
Remote Unit
Non Polarized
Motor
Switch Operated With Push Buttons
Switch & Program Wheel Operated By Motor
Power Tuning Used In Some Versions
SW ON VOLUME CONTROL
Push Push Type
To Power Tuning Switch
Dial Light Used With Models Having Power Tuning
DENOTES CHASSIS GROUND
CONTRAST
BRIGHTNESS
ION TRAP
VOLUME
VERT HOLD
VERT LINEARITY
HEIGHT
WIDTH
HORIZ FREQ
HORIZ HOLD
DEFLECTION YOKE
HV TRANSFORMER
DO NOT MEASURE
BOOST 570V
◆ MEASURED FROM PIN 2 OF V1.
■ MEASURED FROM 135V SOURCE.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION.
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. SEE PARTS LIST.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION OF CONTROL, VIEWED FROM SHAFT END.
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.

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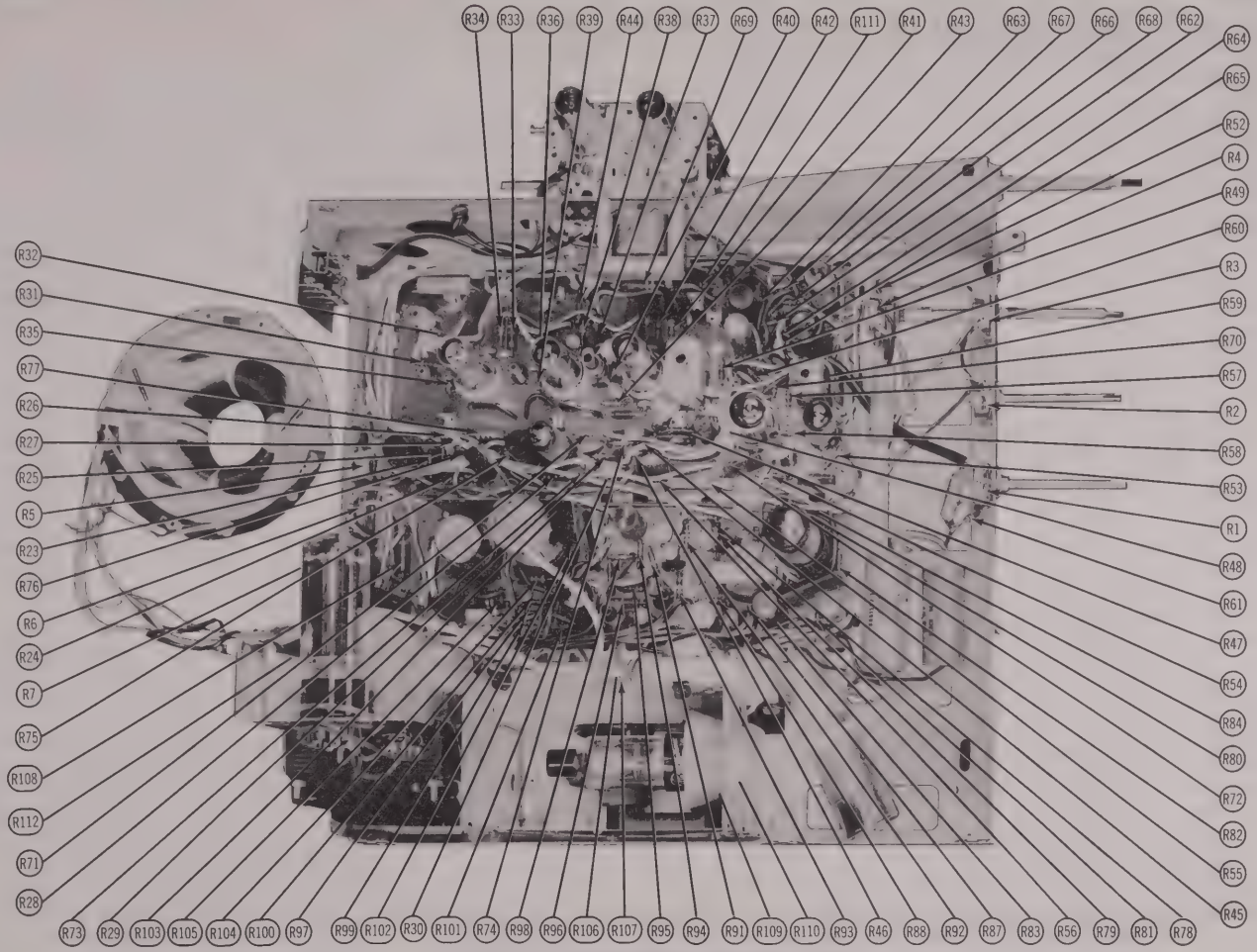


CHASSIS TOP VIEW RESISTOR IDENTIFICATION

DENVER, COLORADO

CHASSIS TOP VIEW

GENERAL ELECTRIC MODELS 21C137, 21C138, 21C160, 21C161, 21C162, 21C172, 21T050, 21T060, 21T061, 24C182, 24C183 ("U" Line)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS- READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal output tube (V13) from its socket. Do not remove the horizontal oscillator tube (V12) to disable the high voltage. Allow twenty minutes warm-up period for receiver and test equipment.

VIDEO IF ALIGNMENT

Set the fine tuning control fully counter clockwise. Connect the negative lead of a 3 volt bias supply to the ungrounded side of C37, the positive lead to chassis. Set the contrast control fully clockwise. If during alignment two peaks occur, use the one with the slug farthest from the chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield fousing over converter tube (V3). Low side to chassis.	44MC (10MC Swp)	47.25MC	11	Vert. amp. thru 10K to point Ⓥ. Low side to chassis.	A1, A3	Adjust for MINIMUM amplitude at marker.
3.	"	"	"	45.5MC	"	"	A3	Adjust to place marker at 50% on curve as in Fig. 1.
5.	"	"	"	45.75MC	"	"	A4	Adjust to place marker at 40% on curve as in Fig. 1.
4.	"	"	"	45.5MC 45.75MC	"	"	A5	Adjust A5 for width of peak region of response curve.
6.	"	"	"	"	"	"	A6, A7	Adjust for symmetry of curve. Recheck positions of markers and retouch if necessary.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If a signal generator providing a 4.5MC signal of crystal accuracy is not available, restore the receiver to normal operating condition and tune to a TV station. Connect VTVM and adjust A8, A9 and A10 as in steps 6 and 7.
Connect two matched 100Ω (±1%) resistors in series from point Ⓥ to chassis. The junction of these two resistors is alignment point Ⓥ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to point Ⓥ. Low side to chassis.	4.5MC (unmod)	Any unused channel.	DC probe to point Ⓥ. Common to chassis.	A8, A9	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point Ⓥ. Common to point Ⓥ.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to point Ⓥ. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any unused channel.	Vert. amp. to point Ⓥ. Low side to chassis.	A8, A9	Disconnect stabilizing capacitor (C3). Adjust for curve of maximum amplitude and symmetry similar to Fig. 2.
7.	"	"	"	"	"	Vert. amp. to point Ⓥ. Low side to chassis.	A10	Reconnect C3. Adjust A10 so that 4.5MC occurs at center of crossover lines as in Fig. 3, SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Turn the contrast control fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD	High side to point Ⓥ. Low side to chassis.	Not used.	4.5MC (400% Mod)	Any unused channel.	Vert. amp. thru detector network (Fig. 4) to pin 11 (cathode) of picture tube.	A11	Adjust for MINIMUM 400% indication on scope.

VHF OSCILLATOR ALIGNMENT

Connect the bias as under "Video IF Alignment". Set the fine tuning control two thirds from full counter clockwise position and leave it in this position during the entire oscillator alignment. Remove the 300 ohm transmission line from the tuner input terminals.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Fig. 5	Thru coupling network in Fig. 5 across primary of antenna input coil.	213MC (10MC Swp)	211.25MC	13	Vert. amp. thru 10K to point Ⓥ. Low side to chassis.	A13	Adjust to place marker at 69% on response curve as in Fig. 6.
			207MC (10MC Swp)	205.25MC	13		A13	
			203MC (10MC Swp)	201.25MC	11		A14	
			197MC (10MC Swp)	195.25MC	10		A15	
			193MC (10MC Swp)	191.25MC	9		A16	
			189MC (10MC Swp)	187.25MC	8		A17	
			177MC (10MC Swp)	175.25MC	7		A18	
			85MC (10MC Swp)	83.25MC	6		A19	
			79MC (10MC Swp)	77.25MC	5		A20	
			69MC (10MC Swp)	67.25MC	4		A21	
			81.5MC (10MC Swp)	81.25MC	3		A22	
			57MC (10MC Swp)	55.25MC	2		A23	

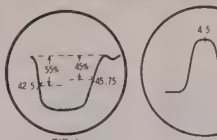


FIG. 1

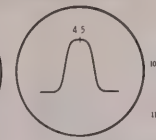


FIG. 2

FIG. 3

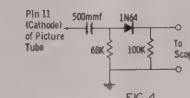
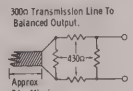
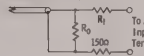


FIG. 4





Z_0	R_0	R_1
50Ω	56Ω	120Ω
72Ω	82Ω	110Ω
92Ω	110Ω	100Ω

FIG. 5

VHF RF AND MIXER ALIGNMENT

Remove the 300 ohm transmission line from the tuner input terminals. If adjustments A32 through A43 require adjusting, (normally adjustments are not required), the tuner cover must be removed and replaced before and after each adjustment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Fig. 5	Thru coupling network (Fig. 5) across primary of antenna coil.	211MC (15MC Swp)	13	Vert. amp. thru 10K to point Ⓥ. Low side to chassis.	A34, A35	Adjust for response of maximum amplitude and symmetry similar to Fig. 7. If tilt exceeds 15% it may be necessary to compress or expand coil turns of L3. Use insulated tool to prevent shorting B+.
11.	"	"	177MC (15MC Swp)	7	"	A26, A27, A28	Adjust for response curve similar to Fig. 7. A26 and A27 effect the bandwidth. Adjust A28 for maximum gain and MINIMUM tilt. If necessary, repositon L8 and L9 (coils whose adjustments are A30 and A31) to obtain desired response.
12.	"	"	207MC (15MC Swp) 201MC (15MC Swp) 195MC (15MC Swp) 189MC (15MC Swp) 183MC (15MC Swp)	12 11 10 9 8	"		Check each channel for response similar to Fig. 7. If not within limits of any high band channel, make compromise adjustments of A24 thru A25 with channel switch set to that channel. Recheck all other high band channels to see that they have not been seriously affected.
13.	"	"	85MC (15MC Swp)	6	"	A29, A30, A31	Adjust for maximum amplitude and flat topped response curve similar to Fig. 8.
14.	"	"	79MC (15MC Swp)	5	"	A32, A33, A34	Adjust for response similar to Fig. 8. If necessary, adjust by expanding or compressing coil turns to obtain response similar to Fig. 8.
15.	"	"	69MC (15MC Swp)	4	"	A35, A36, A37	"
16.	"	"	63MC (15MC Swp)	3	"	A38, A39, A40	"
17.	"	"	57MC (15MC Swp)	2	"	A41, A42, A43	"

UHF 40MC ALIGNMENT

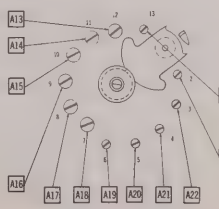
Connect the negative lead of a 3 volt bias supply to the ungrounded side of C30. Connect positive to chassis.
Switch channel selector to UHF position. Disconnect IF output link from converter plate coil L8.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	Fig. 9	High side thru network (Fig. 9) to point Ⓥ. Low side to chassis.	50MC (10MC Swp)	46.5MC 45.75MC	Any UHF position.	Vert. amp. thru 10K to point Ⓥ. Low side to chassis.	A44, A45, A46	Adjust for response similar to Fig. 10. Adjust A44 for maximum gain and correct position of 46.5MC marker. Adjust A45 for maximum gain and correct position of 45.75MC marker. Adjust A46 for maximum amplitude and MINIMUM tilt. Reconnect IF link.

VHF IF TRAP ALIGNMENT

The IF trap (A47) may be aligned by tuning in a station on which the interference occurs and adjusting A47 for MINIMUM interference in the picture. Be careful not to adjust A47 so that it attenuates at channel 2.
If the frequency of the interfering signal is known, the trap may be aligned as in step 19.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Fig. 5.	Thru network in Fig. 5 across VHF Antenna terminals.	44MC (10MC Swp)	Set to freq. of interfering signal. Normally adjusted at 43.5MC	Vert. amp. thru 10K to point Ⓥ. Low side to chassis.	A47	Connect bias as under "UHF 40MC Alignment". Adjust for MINIMUM marker amplitude. Remove bias and all test equipment. Replace V13 in its socket.



OSCILLATOR ADJUSTMENTS

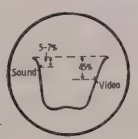


FIG. 6

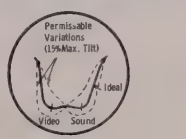


FIG. 7

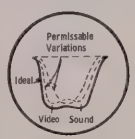


FIG. 8

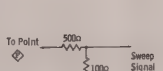


FIG. 9

FIG 10

FIG. 11

GENERAL ELECTRIC MODELS 21C137, 21C138, 21C160, 21C161, 21C162, 21C172, 21T050, 21T060, 21T061, 24C182, 24C183 ("U" Line)

ALIGNMENT INSTRUCTIONS (cont)

UHF TUNER ALIGNMENT

In some cases the tuner may be aligned without removing it from the chassis. In some sets however, adjustments are not accessible without removing the UHF tuner and extending the power leads (not the coax line) and grounding the UHF tuner chassis to main chassis. Set the VHF tuner to the UHF position. If a separate marker generator is used, loosely couple the marker generator lead to the sweep generator leads.
Connect the negative lead of a 3 volt bias supply to the ungrounded side of C30. Positive to chassis.
Preset A47 (IF interference trap) to 43.5MC. This will cause a small notch in the response curve which will serve as the VHF marker during alignment. If necessary, after alignment of the UHF tuner reset A47 by repeating step 19.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20.	Fig. 5	Thru network in Fig. 5 across UHF antenna terminals.	460MC (15MC Swp)	460MC	Turn UHF tuner shaft fully counter clockwise.	Vert. amp. thru 10K to point (E). Low side to chassis.	A48	Adjust to place 460MC marker in notch in response curve created by A47. (Fig. 11)
21.	"	"	910MC (15MC Swp)	910MC	Turn UHF tuner shaft fully clockwise.	"	A49	Adjust to place 910MC marker in notch on response curve created by A47. Repeat steps 20 and 21 until marker and notch coincide at both ends of the band.
22.	"	"	530MC (15MC Swp)	530MC	Turn UHF tuner shaft until 530MC marker falls in notch.	See Remarks	A50, A51	Connect clip lead across the two test points on the UHF tuner. Disconnect the coaxial cable at the VHF tuner and connect a 33Ω resistor from the inner conductor to the outer conductor. Connect the input of an audio amplifier across the 33Ω resistor and feed the output of the amplifier to the input of the scope. The gain of the amplifier must be sufficient to produce a 2 inch deflection on the scope with .1 volts peak to peak at 60 cycles. Adjust for response similar to Fig. 11 with marker as shown. Remove short from test points. Remove amplifier and 33Ω resistor and reconnect coaxial cable to VHF tuner.
23.	"	"	880MC (15MC Swp)	880MC	Turn UHF tuner shaft until 880MC marker falls in notch.	Vert. amp. thru 10K to point (E). Low side to chassis.	A52, A53	Connect clip lead across the two test points on the UHF tuner. Disconnect the coaxial cable at the VHF tuner and connect a 33Ω resistor from the inner conductor to the outer conductor. Connect the input of an audio amplifier across the 33Ω resistor and feed the output of the amplifier to the input of the scope. The gain of the amplifier must be sufficient to produce a 2 inch deflection on the scope with a .1 volts peak to peak at 60 cycles. Adjust for response similar to Fig. 11 with marker as shown. Remove short from test points. Remove amplifier and 33Ω resistor and reconnect coaxial cable to VHF tuner. Repeat steps 21 thru 23 until symmetrical response is obtained at both 530MC and 880MC.
24.	"	"	See freq. chart.	See freq. chart.	UHF	"	A54	Sweep entire UHF band to observe response curve. Check for exceedingly low gain points within the tuning range. This is usually a result of insufficient oscillator injection and may be checked by measuring crystal current. Short the test points together with a clip lead but do not short to chassis; and connect a zero to five MA meter across the output coaxial cable. The limits under normal normal conditions are .65MA and 3.0MA. If the readings are below .65MA or above 3.0MA, adjust the position of the oscillator injection loop (A54) with respect to the crystal clip terminal.

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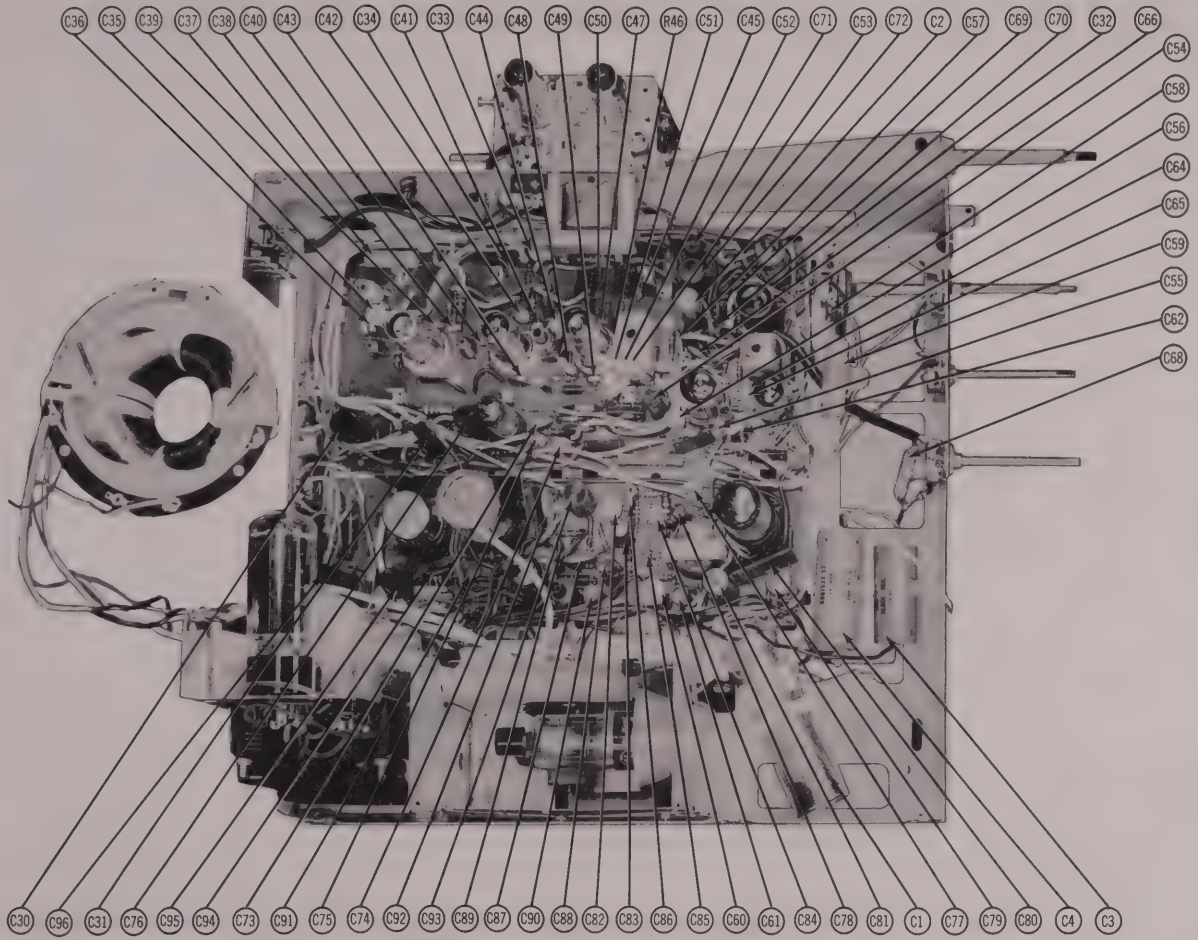
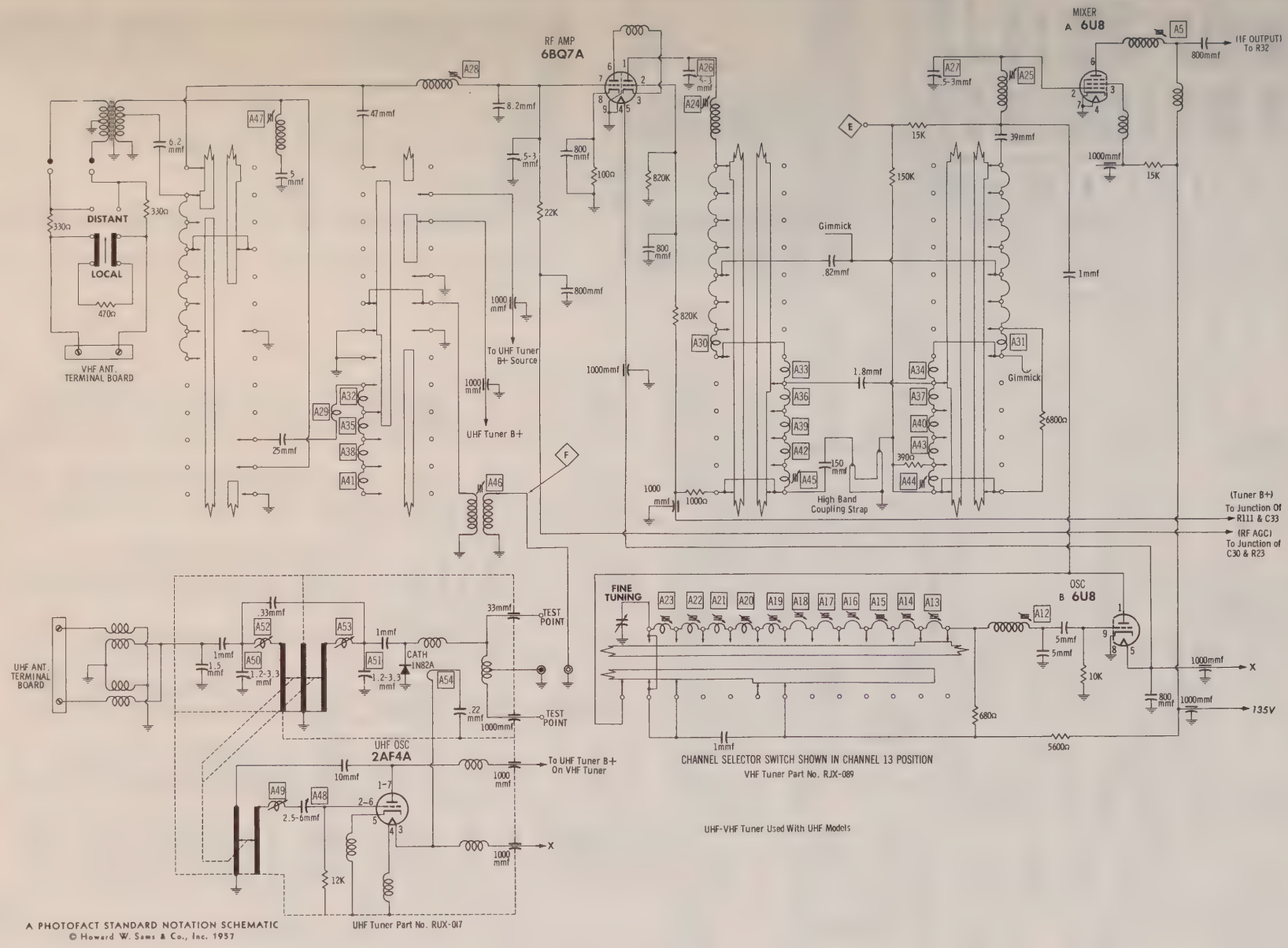


CHASSIS TOP VIEW CAPACITOR IDENTIFICATION



ALTERNATE UHF-VHF TUNER SCHEMATIC

GENERAL ELECTRIC MODELS 21C137, 21C138, 21C160, 21C161, 21C162, 21C172, 21T050, 21T060, 21T061, 24C182, 24C183 ("U" Line)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amp	6BQ7A	Note 1
V2	Mixer-Osc	6U8	6BY8
V3	1st Video IF Amp.	6CF6	6BL7GT
V4	2nd Video IF Amp.	6CF6	6CG7
V5	3rd Video IF Amp.	6CH6	6BH8A
V6	Video Output-Sync	6AL6	6AX4GT
V7	Sound IF Amp.	6AL6	1B3GT
V8	Ratio Det-AF Amp. - AGC-Clamper	6T8	6U4GA/GB

Note 1 6BH8 may be used in some versions

PICTURE TUBE

ITEM No.	REPLACEMENT DATA G E	CBS	GENERAL ELECTRIC	SYLVANIA	NOTES
V17	21ATP4A 21ATP4		21ATP4A 21ATP4 ①	21ATP4A 21ATP4 ①	① Aluminized ② Silver Screen 65
		21ATP4 ① 21ALP4A ①			
	21ALP4A	21ALP4A ①	21ALP4A, B ①	21ALP4A, B ①	
		21ALP4B ① 21ALP4		21ALP4	
	21BTP4A	21BTP4A ① 21BTP4			
	24TP4 24DP4A	24TP4 ① 24DP4A ①	24TP4 ① 24DP4A ①	24TP4 ① 24DP4A ①	
			24DP4		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	VOLT	G E PART No.	REPLACEMENT DATA AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	160	350	RCE-224	AFH4-99-80		FP419 67		Q-188 T-500	R2256*
B	100	150							
C	80	200							
D	40	75							
C2	4	50	RCE-236	PRS150V4	BR550	TC50	TD-4-50	MMT-0505	TVA-1303
C3	90	300	RCE-223	PR450V90	BR035	TC60	TD-40-450	MT-4590	TVA-1716
C4	40	450	RCE-232	PR450V40	BR045	TC70	TD-40-450	FM-4540	TVA-1713

* Non catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd for Paper Capacitors, and in mmfd for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP	VOLT	G E PART No.	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	5		RCW-3113	NPO-D15	TCZ-4R7	Z01	TCO-5	ET-556	5TCCB-V47	
C6	6.2		RCW-3240			Z012				
C7	18		RCW-3284							
C8	8.2		RCW-3307	NPO-D18.2		Z015	TCO-8.2 3115-J	CT565A		
C9	5-3		RCY-080		829-3		829-3			
C10	800		RCW-3037	BPD-0008		DD-801	K067	ED-800	UC-5375	SGA-T8
C11	800		RCW-3037	BPD-0008		DD-801	K067	ED-800	UC-5375	SGA-T8
C12	800		RCW-3037	BPD-0008		DD-801	K067	ED-800	UC-5375	SGA-T8
C13	5-3		RCY-080					3115-J3	CT565A	
C14	1000		RCW-3117	EF-001		MFT-1000				503C-D1
C15	150		RCW-3148							
C16	82									
C17	1.8									
C18	39		RCW-3199							
C19	5-3		RCY-080		829-3		3115-D	CT565A		
C20	1			NPO-S11	TCZ-1	T203	TCO-1		5TCCB-V1	
C21	1		RCW-3285							
C22	5		RCW-3243				TC3-4, 7			
C23	5									
C24	800		RCW-3037	BPD-0008		DD-801	K067	ED-800	UC-5375	SGA-T8
C25	1000		RCW-3117	EF-001		MFT-1000				503C-D1
C26	800		RCW-3037	BPD-0008		DD-801	K067	ED-800	UC-5375	SGA-T8
C27	1000		RCW-3117	EF-001		MFT-1000				503C-D1
C28	1000		RCW-3117	EF-001		MFT-1000				503C-D1
C29	1000		RCW-3117	EF-001		MFT-1000				503C-D1
C30	5	200								2SE-P15
C31	282	200						ACE612		SEE-S33
C32	5000		RCW-3084	BPD-005		DD-502	K080	ED-005	DC535	5EK-D5
C33	10000		RCW-3186	BPD-01		DD-101	K082	ED-01	DC501	5EK-S1
C34	800		RCW-3037	BPD-0008		DD-801	G067	ED-0008	UC-5375	SGA-T8
C35	18		RCG-018			TCZ-18	Z022	TCO-18		
C36	800		RCW-3037	BPD-0008		DD-801	G067	ED-0008	UC-5375	SGA-T8
C37	05	200		BPD-05		DF-503	CUB22S5	GEM-415	5TM-S5	Note 4-
C38	800		RCW-3037	BPD-0008		DD-801	G067	ED-0008	UC-5375	SGA-T8
C39	910			B910			G068	ED-W0	1FM-S9I	Note 1
C40	800		RCW-3037	BPD-0008		DD-801	G067	ED-0008	UC-5375	SGA-T8
C41	800		RCW-3037	BPD-0008		DD-801	G067	ED-0008	UC-5375	SGA-T8
C42	560		RCW-3282	DI-00056		DD-561	G063	ED-560	UC-5356	SGA-T56
C43	800		RCW-3037	BPD-0008		DD-801	G067	ED-0008	UC-5375	SGA-T8
C44	51		RCW-3278	NPO-D150	TCZ-51	Z035	TCO-51	ET-545	5TCC-Q5	
C45	800		RCW-3037	BPD-0008		DD-801	G067	ED-0008	UC-5375	SGA-T8
C46	800		RCW-3037	BPD-0009		DD-801	G067	ED-0008	UC-5375	SGA-T8
C47	820		RCW-3287	S820		DS-821	G070	ED-820	UC-5375	SGA-T82
C48	1800		RCW-3187	DI-0012		DD-182	G070	ED-1800		SGA-D18
C49	800		RCW-3037	BPD-0008		DD-801	G067	ED-0008	UC-5375	SGA-T8
C50	800		RCW-3037	BPD-0008		DD-801	G067	ED-0008	UC-5375	SGA-T8
C51	560		RCW-3282	DI-00058		DD-561	G063	ED-560	UC-5356	SGA-T56
C52	5		RCW-3206	NPO-D12		TCZ-3R3	Z007	TCO-3	ET-555	5TCCB-V33
C53	5		RCW-3057	NPO-D15		TCZ-4R7	Z01	TCO-5	ET-556	5TCCB-V47
C54	047	200							5TCC-S33	
C55	5000		RCW-3169	NPO-DI33		TCZ-33	Z029	TCO-33	ET-5433	
C56	5000		RCW-3014	BPD-005		DD-502	K080	ED-005	DC535	5EK-D5 Note 2
C57	10000		RCW-3186	BPD-01		DD-101	K082	ED-01	DC501	5EK-S1
C58	47		RCW-3276	B47		DM-470	TP29	GP-47	UC-5447	SGA-Q47
C59	15	600		P488H-15			CUB4P15		GEM-4015	47M-P15
C60	001	1000								
C61	01	1000								
C62	30		RCW-3173	NPO-DI30		TCZ-30	Z023	TCO-30	ET-543	5TCC-Q28
C63	47		RCW-3259	BPD-000047		DD-470	K080	ED-47	UC-5447	SGA-Q47 Note 3
C64	5000		RCW-3014	BPD-005		DD-502	K080	ED-005	DC535	5EK-D5
C65	5000		RCW-3014	BPD-005		DD-502	K080	ED-005	DC535	5EK-D5
C66	5000		RCW-3014	BPD-005		DD-502	K080	ED-005	DC535	5EK-D5 Note 3
C67	5000		RCW-3014	BPD-005		DD-502	K080	ED-005	DC535	5EK-D5

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING CAP	VOLT	G. E. PART No.	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C68	05	200		BPD-015		DDD6-153	CUB6S15	ED-015	GRM-415	47M-S15
C69	10000		RCW-3186	BPD-01		DD-103	K083	ED-01	DC511	5HK-S1
C70	10000		RCW-3186	BPD-01		DD-103	K083	ED-01	DC511	5HK-S1
C71	01	1000								
C72	1	400							ACE401	4SE-P1
C73	5000		RCW-3014	BPD-005		DD-502	K080	ED-005	DC535	5EK-D5
C74	5000		RCW-3014	BPD-005		DD-502	K080	ED-005	DC535	5EK-D5
C75	470	1000	RCW-3319	BPD-00047		DD-471	K070	ED-470	UC-5347	SGA-T47
C76	1	400							ACE401	4SE-P1
C77	1200		RCW-3187	1484-0012			1RSD12	ED-1200		MS-D12 6SE-D68
C78	.0068	600							ACE601	6SE-P1
C79	1	600								
C80	35000		RCW-3277							
C81	1	400							ACE401	4SE-P1
C82	100		RCW-3234	N750-DI00	TCN-100	N042	TCT-100	NT-541		5TCU-T1
C83	82		RCW-3233	1469-00082	D6-S80	2040	ED-82			MS-482
C84	1200		RCW-3187	1484-0012			1RSD12	ED-1200		MS-D12
C85	470	1000	RCW-3285	HVD-15-470	DD-471		VT47	HD15-470	DC30347	10GA-T47
C86	1200		RCW-3187	1484-0012			1RSD12	ED-1200		MS-D12
C87	5000		RCW-3188	DI-005	DD-5032	K080	ED-005	DC535		5EK-D5
C88	1	500							ACE401	2SE-P1
C89	910	500	RCY-847	1469-00091			1RST91			MS-391
C90	0047	400							ACE247	4SE-D47
C91	820		RCW-3287	1464-00082			1RST82	ED-820		MS-382
C92	5000		RCW-3188	DI-005	DD-5032	K080	ED-005	DC535		5EK-D5
C93	1	400							ACE401	4SE-P1
C94	10000		RCW-3186	BPD-01	DD-103	K083	ED-01	DC501		5HK-S1
C95	230	4000	RCW-3275	HVD-50-230	DD60-221	VST23	HD6-230	DC60323		50GA-T23
C96	1	400						ACE401		4SE-P1

Note 1 Some versions may use 680MMF in this application. (Part #RCW-3231).
Note 2 Some versions may use 10000MMF in this application. (Part #RCW-3186).
Note 3 Not used in some versions.
Note 4 Some versions may use .1MFD @ 300V in this application.

CONTROLS

ITEM No.	RATING RESIST-ANCE	WATTS	G.E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	RRC-394				UT431	Volume Control Tap@ 250K
B	Shaft		Not Req.				D6-37	Attach to R1A
C	Switch		Not Req.				UE-36	(Push-pull) Attach to R1A
R2A	600K	½	RRC-393					Vertical Hold
B	Shaft		Not Req.					Attach to R2A
R3A	200K	½	RRC-392					Brightness Control
B	Shaft		Not Req.					Attach to R3A
R4A	12K	½	RRC-390					Contrast Control Tap@10K-Note 1
B	Shaft		Not Req.					Attach to R4A
R5	3000Ω	3	RRC-391	39-3000				Vertical Linearity
R6A	3Meg	½	RRC-301	AB-84	A47-1Meg-S	QH-160	SU-59	Height Control
B	Shaft		Not Req.	AK-1	FR3-1/4	TQ	Not Req.	Attach to R6A
R7A	1Meg	½	RRC-391	AB-69	A47-1Meg-S	QH-157	TA16L	Horizontal Hold
B	Shaft		Not Req.	AK-1	RS5-3	Not Req.	Not Req.	Attach to R7A

Note 1: Some versions may use alternate 15K, control part #RRC-386 or 17K with 15K stop, control part #RRC-482.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	WATT	G. E. PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R8	470Ω		BTS-470		
R9	330Ω		BTS-330		
R10	220Ω		BTS-220		
R11	22K		BTS-22K		
R12	100Ω		BTS-100		
R13	820K		BTS-820K		
R14	820K		BTS-820K		
R15	10000Ω		BTS-10K		
R16	8800Ω		BTS-8800		
R17	150K		BTS-150K		
R18	15K		BTS-15K		
R19	15K		BTS-15K		
R20	5600Ω		BTS-5600		
R21	680Ω		BTS-680		
R22	10K		BTS-10K		
R23	2.2Meg				
R24	10Meg 5%				
R25	10Meg 5%				
R26	3.9Meg		BTS-3M9		
R27	3.9Meg		BTS-3M9		
R28	3.3Meg		BTS-3M3		
	5%				
R29	3.9Meg				
R30	2.2Meg				Note 5
R31	5600Ω				
R32	33Ω				
R33	680Ω	1	BTS-6800		
R34	4700Ω		BTS-4700		Note 1
R35	47Ω		BTS-47		
R36	10K		BTS-10K		
R37	6800Ω	1	BTS-6800		
R38	4700Ω		BTS-4700		Note 1
R39	47Ω		BTS-47		
R40	18K				
R41	4700Ω		BTS-4700		
R42	1000Ω		ACE6101		
R43	100Ω		BTS-101		
R44	100Ω		BTS-101		
R45	39000Ω 5%		BTS-3900 5%		Note 2
R46	39K		BTS-390K		
R47	8200Ω		BTS-8200		
R48	1Meg		BTS-1Meg		
R49	100Ω		BTS-100		
R50	68K		BTS-68K		Note 3
R51	4700Ω		BTS-4700		Note 3
R52	2200Ω		BTS-2200		Note 3
R53	15K		BTS-15K		Note 4
R54	330K		BTS-330K		
R55	5600Ω	3	BTB-5600		

ITEM No.	RATING OHMS	WATT	G. E. PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R56	180Ω			BTS-1800	
R57	3300Ω			BTS-3300	
R58	330Ω			BTS-330	
R59	220Ω			BTS-220	
R60	33K			BTS-33K	
R61	33K			BTS-33K	
R62	22Ω			BTS-22	
R63	150Ω			BTS-150	
R64	3.3Meg			BTS-3M3	
R65	470K			BTS-470K	
R66	560K 5%			BTS-560K 5%	
R67	620K 5%			BTS-620K 5%	
R68	12K			BTS-12K	
R69	330Ω	1		BTA-330	
R70	470K			BTS-470K	
R71	1.2Meg			BTS-1M2	
R72	33K			BTS-33K	
R73	470K			BTS-470K	
R74	130K			BTS-130K	
R75	33K			BTS-33K	
R76	15K	1		BTA-15K	
R77	47K			BTS-47K	
R78	33K	1		BTS-33K	
R79	33K	1		BTA-33K	
R80	820K			BTS-820K	
R81	1.6Meg			BTS-1M6	
R82	2.7Meg			BTS-2.7Meg	
R83	2700Ω			BTS-2700	
R84	1000Ω	1		BTA-1000	
R85	2200Ω				
R86	2200Ω				
R87	4700Ω			BTS-4700	
R88	33K			BTS-33K	
R89	1.6Meg			BTS-1.6Meg	
R90	820K			BTS-820K	
R91	560K 5%			BTS-560K 5%	
R92	680K				
R93	100K			BTS-100K	
R94	1Meg				
R95	82K				
R96	15K	1			
R97	51K 5%				
R98	1.5Meg				
R99	82K				
R100	15K				
R101	820Ω 5%				
R102	820K				
R103	100Ω				
R104	82000Ω	1		BTA-8200	Note 3

RESISTORS (cont)

ITEM No.	RATING OHMS	WATT	G.E. PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R105	10K	2			
R106	330K	1			
R107	330K	1			
R108	1500Ω	3		BTB-1500	

Note 1: A 1000Ω resistor used in some versions.
Note 2: A 39000 resistor used in some versions.
Note 3: Not used in some versions.
Note 4: A 10K resistor used in some versions.
Note 5 A 100K resistor used in some versions.

ITEM No.	RATING OHMS	WATT	G.E. PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R109	1 90	1	RRE-003	BW1-1 9	
R110	2200Ω			BTS-2200	
R111	330Ω	1		BTA-330	
R112	470K			BTS-470K	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	G. E. PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	560VCT ① 1.62A	5V ② 2.30A	24V ③ Tap@6.3V 1.9A 1A	RTL-209					

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	G. E. PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Osc. Trans.	RTO-192	B6705 ①	A-3004 ① ②		A-8281 ①	26A02 ①	A-120Z ① ②
T3	Horiz. Output Trans.	RTO-190						
T4	Vert. Output Trans.	RTO-193	Z1807 ③	A-2824 ③		X135*	26H54 ②	A-103X ② ③
T5A	Yoke(80°,Horiz@15MC)	RLD-071	DF806 ④	MD9-1K ④	223D5 ④	Y-30 ④	Y-60-2 ④	Y-40-1 ④
B	Vert(12MH)	RLD-076 ④	④	④	④	④	④	④

① Connect red and yellow leads to cathode. Connect blue lead to ground. Connect green lead to grid capacitor C78.
② Bend down tabs to duplicate original mounting.
③ Cut and tape blanking winding lead.
④ Drill new mounting hole(s).
⑤ Connect as auto trans.
⑥ Requires new clamping device.
⑦ Connect horiz. yoke term #3 to horiz. output trans. term #3; connect horiz. yoke term #1 to horiz. output trans. term. #1.
⑧ Connect horiz. yoke damping network across terms. #3 and #7.
⑨ Alternate part used in some versions.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
3			3	3		
6		6	6	6		
2		2	2	2		
1		1	1	1		
4		4	4	4		
Special Notes			⑩	⑩		

⑩ If necessary to remove drive lines, add approx. 100MMF @ 4KV in parallel with capacitor C95.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC	G.E. PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	5.2K	3-4Ω	RTO-194	Z1807 ①	A-3019	A-3877 ①	26B49	S-3X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP.	G.E. PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	4"	PM	3-4Ω	ROP-035 ①	4A07	3235S1	① Used in models 21T050, 21T060, 21T061.
	5"	PM		6-825D7 ②			② Used in models 21C137, 21C138.
	8"	PM		6-825D1 ③			③ Used in models 21C160, 21C161, 21C162, 21C172, 24C182.

COILS (RF-IF)

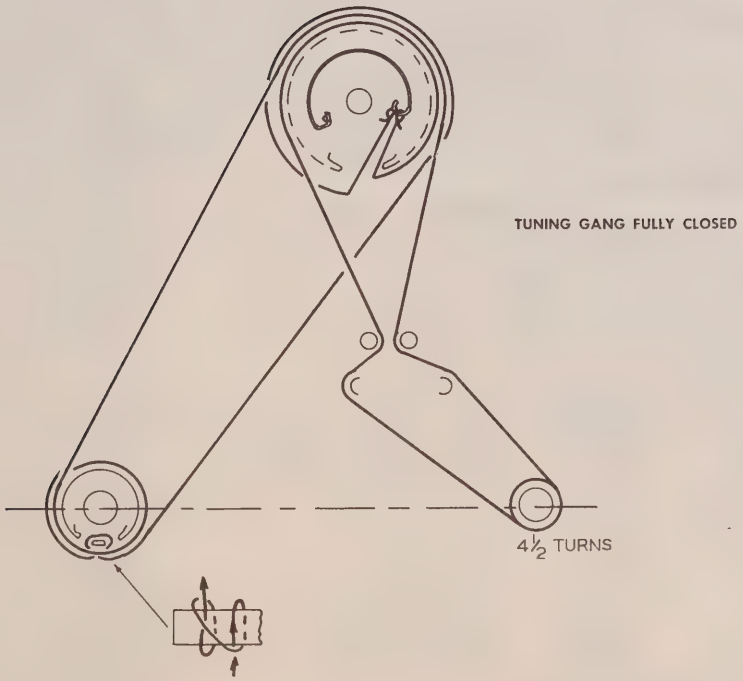
ITEM No.	USE	G. E. PART No	NOTES
L1	Ant. Trans.	RLA-045	
L2	IF Trap	RLI-589	
L3	Ant. Coils	RSX-078	Includes C8, L1 Channels 2-13
L4	Ant. Coils	RSX-015	Includes C10, R11 Channels 2-6
L5	RF Coils	RSX-074	Includes C15, R18

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	G. E. PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L10	RF Choke	0Ω		RLI-384				.1 Microhenry
L11	47.25MC Trap	0Ω		RLI-384				Core part #RE1-088
L12	1st Video IF	0Ω		RLI-385				
L13	2nd Video IF	0Ω	0Ω	RTL-198				Core part #RE1-095
L14	3rd Video IF	.1Ω	.1Ω	RTL-389				Includes 47, 33MC trap; Top core part #RE1-065 Bot. core part #RE1-068
L15	4th Video IF	.1Ω	.1Ω	RLI-385				Core part #RE1-065
L16	Series Peaking Coil	0Ω		RLI-301				.22 Microhenry
L17	RF Choke	1.8Ω		RLI-085	18-1003		4806	2.2 Microhenries;IRC part #CLA
L18	Series Peaking Coil	1.1Ω						6.6 Microhenries
L19	Series Peaking Coil	4.8Ω		RLI-340	19-1004		4610	5.6 Microhenries; IRC part #CLA

RESISTANCE MEASUREMENTS

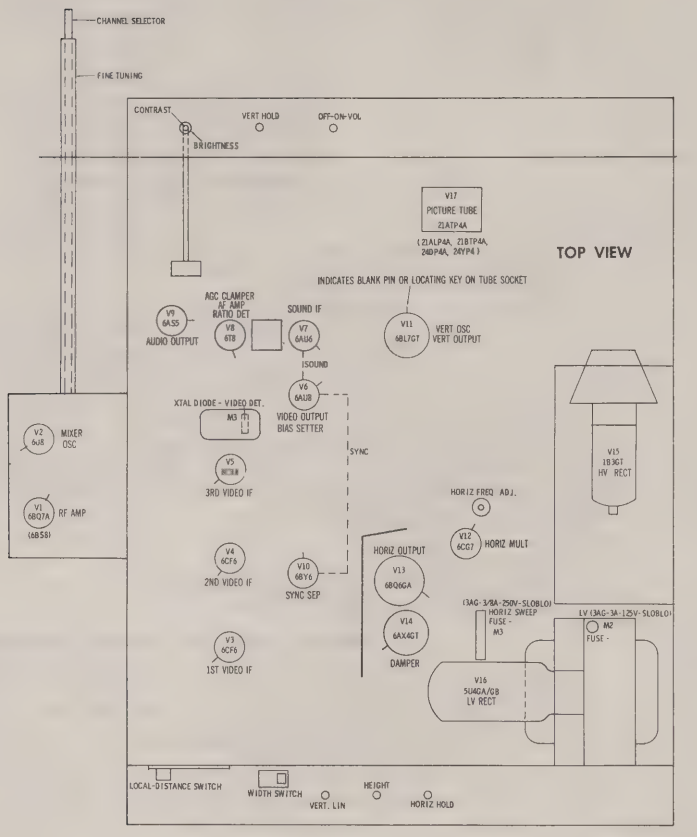
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7A	†1400Ω	400K	INF	0Ω	.1Ω	INF	8Meg	100Ω	0Ω
V2	6U8	■5600Ω	165K	■ 15K	0Ω	.1Ω	■ 0Ω	0Ω	0Ω	10K
V3	6CF6	2.5Meg	47Ω	.1Ω	0Ω	†6800Ω	■ 4800Ω	0Ω		
V4	6CF6	2.5Meg	47Ω	.1Ω	0Ω	†6800Ω	■ 4800Ω	0Ω		
V5	6CB6	.1Ω	180Ω	.1Ω	0Ω	†4700Ω	■ 1100Ω	0Ω		
V6	6AU8	0Ω	2.5Meg	†470K	.1Ω	0Ω	100Ω	1Meg	■ 0Ω	†5000Ω
V7	6AU6	2.6Ω	0Ω	.1Ω	0Ω	■ 3300Ω	■ 3300Ω	330Ω		
V8	6T8	INF	22K	INF	0Ω	.1Ω	5Meg	0Ω	3.3Meg	†470K
V9	6AS5	40K	300K	.1Ω	0Ω	300K	†12K	†810Ω		
V10	6BY6	†1.5Meg	0Ω	.1Ω	0Ω	†22K	■12K	3.3Meg		
V11	6BL7GT	2.2Meg	*4200Ω	●1200Ω	●1Meg	●■ 2.5Meg	140Ω	0Ω	.1Ω	
V12	6CG7	†15K	1.5Meg	820Ω	0Ω	.1Ω	†82K	51K	820Ω	0Ω
V13	6BQ6GA	NC	0Ω	NC	†18K	820K	NC	.1Ω	0Ω	TOP CAP *31Ω
V14	6AX4GT	NC	TP	INF	NC	†59Ω	NC	.1Ω	0Ω	
V15	1B3GT	PINS 1 - 8 HAVE INFINITE RESISTANCE								TOP CAP *441Ω
V16	5U4GA/GB	TP	45K	NC	19Ω	NC	18Ω	NC	45K	
V17	21ATP4A	0Ω	33K	Pin 6 820K	Pin 10 820K	Pin 11 ●■250K	Pin 12 .1Ω			

† MEASURED FROM PIN 8 OF V16.
■ MEASURED FROM 135V LINE.
* MEASURED FROM PIN 3 OF V14.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
NC NO CONNECTION
TP TIE POINT



UHF DRIVE CORD STRINGING

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

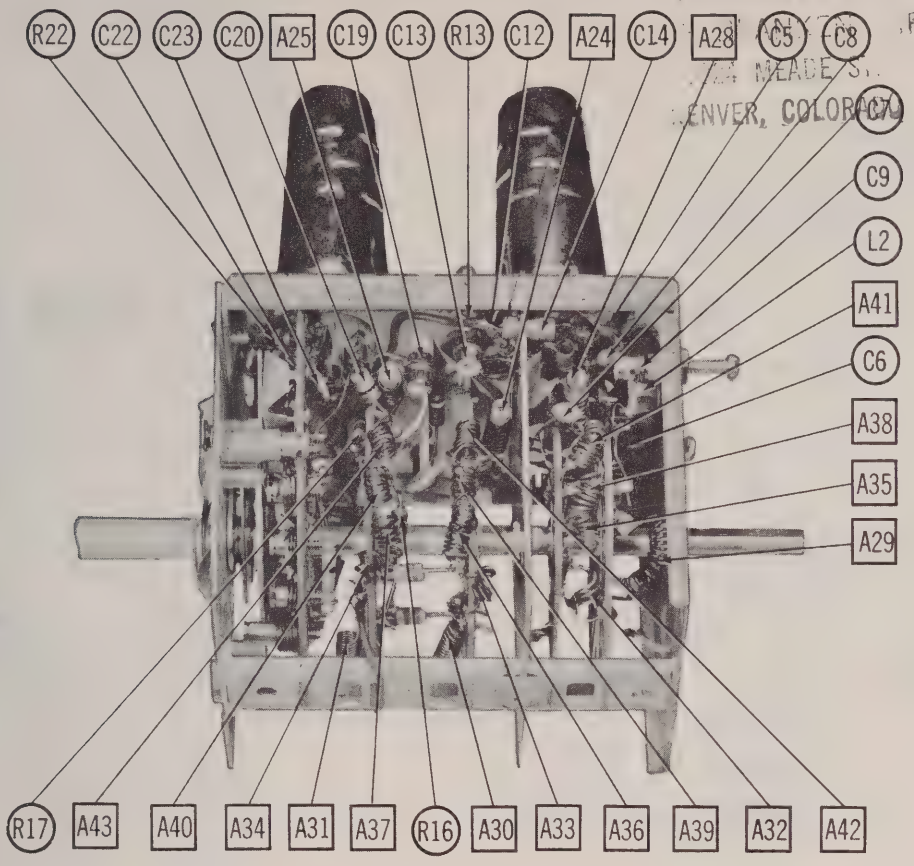
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V9, V16, Fuse (M2)

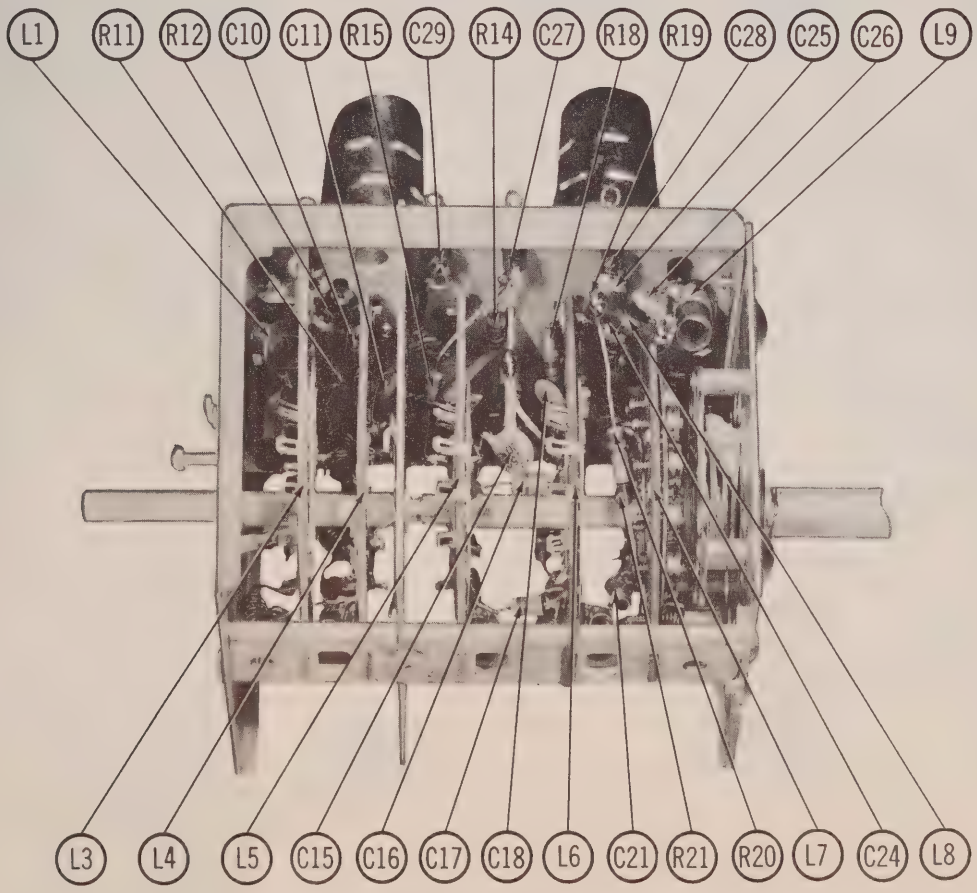
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V9, Diode (M4)
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V17
Has pic, no sound - V7, V8, V9
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V11
No horiz. sync - Diode (M1), V12
No vert. or horiz. sync - V6, V9, V10

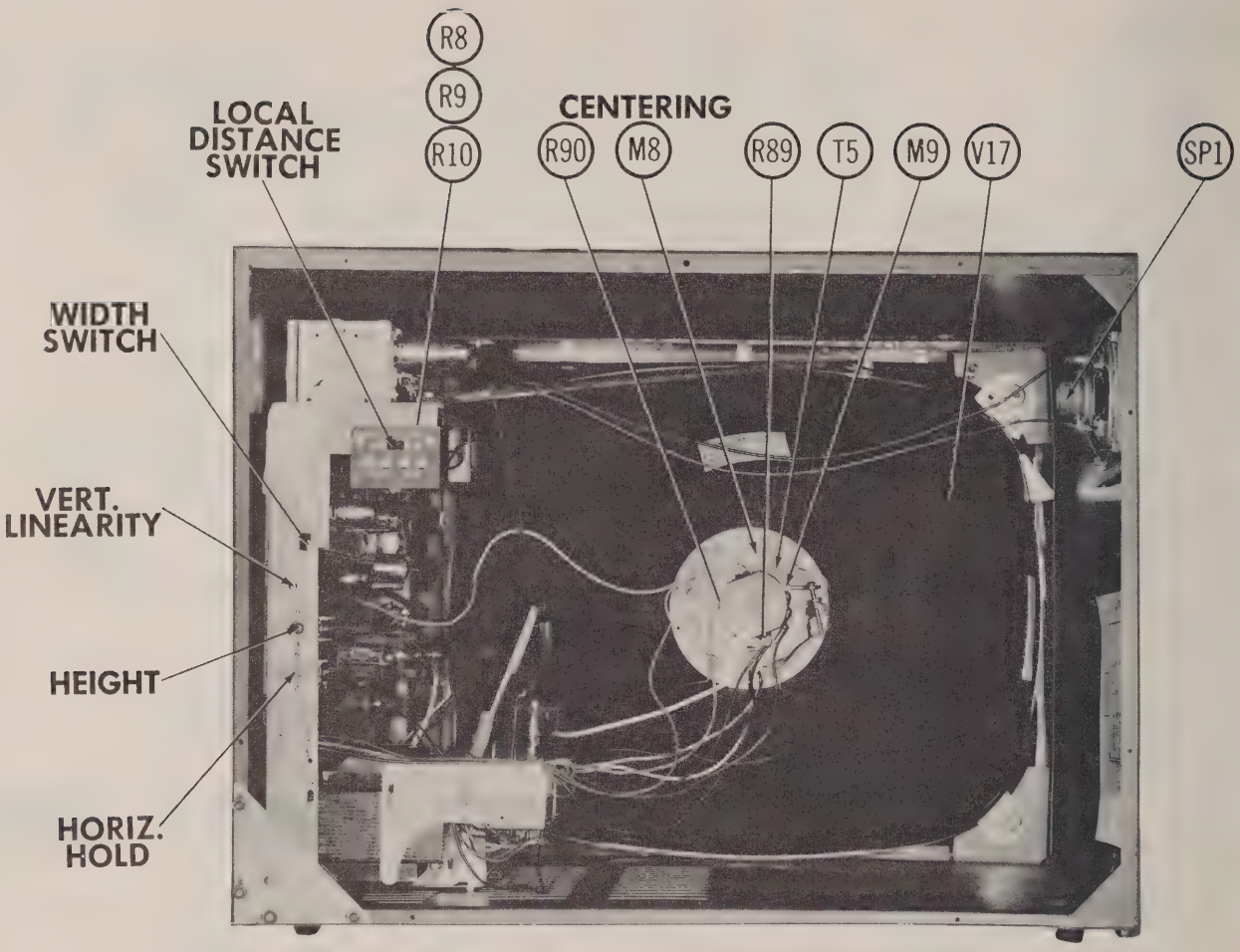
SWEEP FAILURE
No raster, has sound - V12, V13, V14, V15, V17, Fuse (M3)
No vertical deflection - V11
Poor vert. linearity or foldover - V11
Poor horiz. linearity or foldover - V12, V13, V14
Narrow picture - V12, V13, V14, V16
Vert. off freq. - V11
Horiz. off freq. - M1, V12



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a clip lead from the ungrounded side of C86 to chassis. Shunt the horizontal frequency coil L28 with a 1000Ω resistor.

Adjust the horizontal hold control (R7) so that the picture floats back and forth across thru sync position.

Remove the 1000Ω resistor from across L28. Adjust horizontal frequency slug (B1) so that the picture again floats back and forth across sync position.

Remove the short from C86.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	G. E. PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L20	Shunt Peaking Coil	8.5Ω		RLI-209	19-3250	TV-185	6130	270 Microhenries
L21	Series Peaking Coil	4.8Ω		RLI-382	19-3100		6112	110 Microhenries
L22A	4.5MC Trap	3.2Ω		RLI-363				
B	Sound IF	2.8Ω						Core part #REI-067
L23	Shunt Peaking Coil	11Ω		RLI-345	19-4400	TV-190	6134	390 Microhenries
L24	Shunt Peaking Coil	23Ω		RLI-386				1500 Microhenries
L25	Series Peaking Coil	6.7Ω		RLI-383	19-4201	TV-184	6154	200 Microhenries
L26	Ratio Det.	4.8Ω	1.2ΩCT	RTD-026				Tertiary winding = .6Ω; Core part #REI-065
L27	RF Choke	8.2Ω		RLI-153	19-1005		4612	10 Microhenries; IRC part #CL-1.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	G. E. PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L28	75Ω		RLI-365							

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	G. E. PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L29	.230A	59Ω	1.13HY	RLF-075	C5040	C-2994	C-2327	26C41	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G. E. PART No.	REPLACEMENT DATA	
K1	De-emphasis	22K, 1000MMF, 4000MMF, 10000MMF	REK-012	Aerovox Centralab Sprague	PA425 PC-186 PB-3

SELENIUM DIODE

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	G. E. PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1		RER-023 ②		1T1 ①				① 2 required. ② Some versions may use 2 germanium diodes part #RED-006 in this application and recommends this no. for replacement.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			G. E. PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG S/B	3A 125V	REF-028 ①	RJB-077 ①	313003. (3AG-S/B-3A)	357001	MDX3	4405
M3	3AG P/T S/B	3/8A	REF-016		315.375 (3AG-P/T-S/B-3/8A)		MDV 3/8	

① Not used in some versions.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		G. E. PART No.	SYLVANIA PART No.	
M4	1N87G	RED-001	1N60	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M5	Tuner	RJX-090	VHF (12 Position). Used in VHF models.
	Tuner	RJX-089	VHF (13 Position). Used in UHF-VHF models.
	Tuner	RUX-017	UHF. Used in UHF-VHF models.
M6	Switch	RSS-011	Local-Distant (DPDT) Slide Type.
M7	Switch	RSS-013	Width (SPST) Slide Type. (Note 1)
M8	Centering Device	REA-013	
M9	Ion Trap	RET-013	
	Retainer Ring	RHH-012	Yoke
	Glass	RDW-117	Model 21T050.
	Glass	RDW-118	Tinted. Models 21C137, 21C138, 21C160, 21C161, 21C162, 21C172, 21T060, 21T061.
	Glass	RDW-120	Tinted. Models 24C182, 24C183.
	Mask	RDM-074	Model 21T050.
	Mask	RDM-075	Models 21T060, 21T061, 21C160, 21C161, 21C162, 21C172.
	Mask	RDM-076	Models 21C137, 21C138.
	Mask	RDM-077	Models 24C182, 24C183.

Note 1: Not used in some versions.

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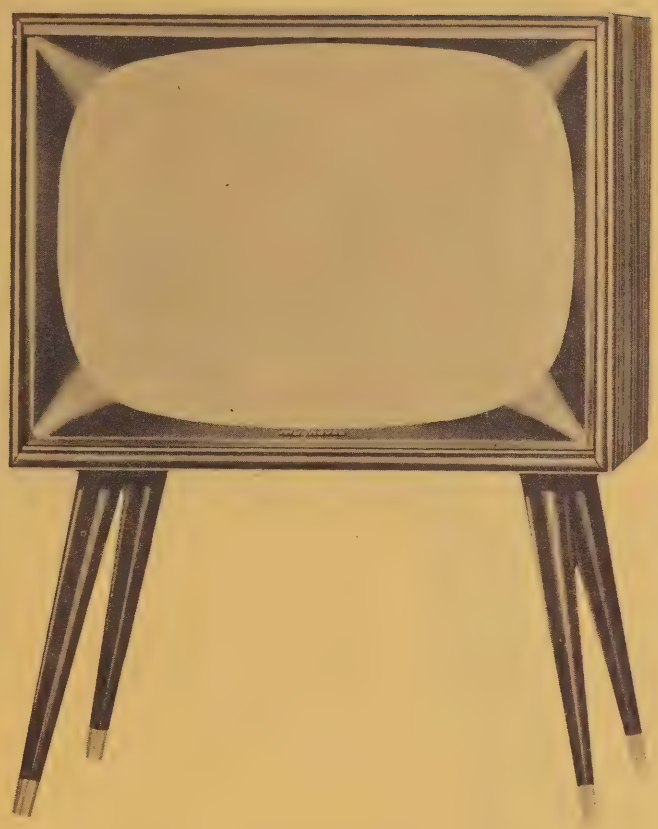

MAGNAVOX CHASSIS CTA475BB

TRADE NAME	MAGNAVOX CHASSIS
	CMUA475BB, CC, CMUA476BB, CC, CMUA479BB, CC, CMUA480BB, CC, CMUA481BB, CC, CTA475BB, CC, CTA476BB, CC, CTA479BB, CC, CTA480BB, CC, CTA481BB, CC..... 600 Series
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne, Indiana
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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MAGNAVOX CHASSIS CMUA475BB, CMUA476BB, CMUA479BB, CMUA480BB, CMUA481BB, CTA475BB, CTA476BB, CTA479BB, CTA480BB, CTA481BB (600 Series)

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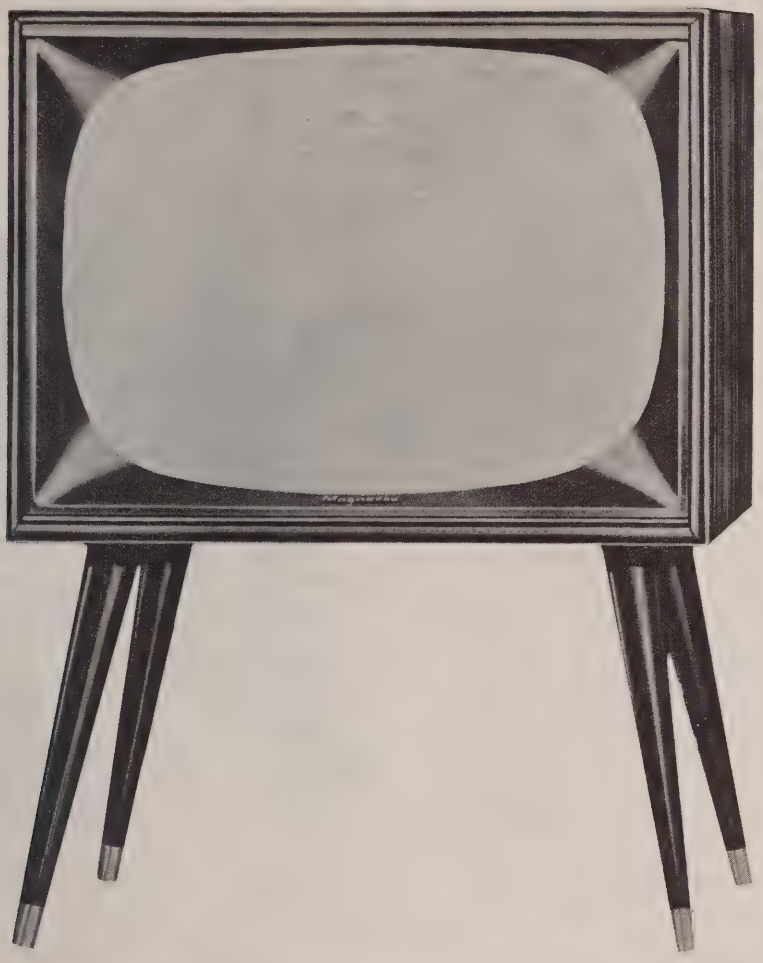


MAGNAVOX CHASSIS CMUA475BB, CMUA476BB, CMUA479BB, CMUA480BB, CMUA481BB, CTA475BB, CTA476BB, CTA479BB, CTA480BB, CTA481BB (600 Series)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of VHF tuner oscillator adjustments, it is necessary to remove the chassis from the cabinet. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Remove rear cover and supply power to the chassis. Set the horizontal hold control at its mid-range position and adjust the horizontal frequency slug (L17) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the discriminator located on top of the chassis.

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

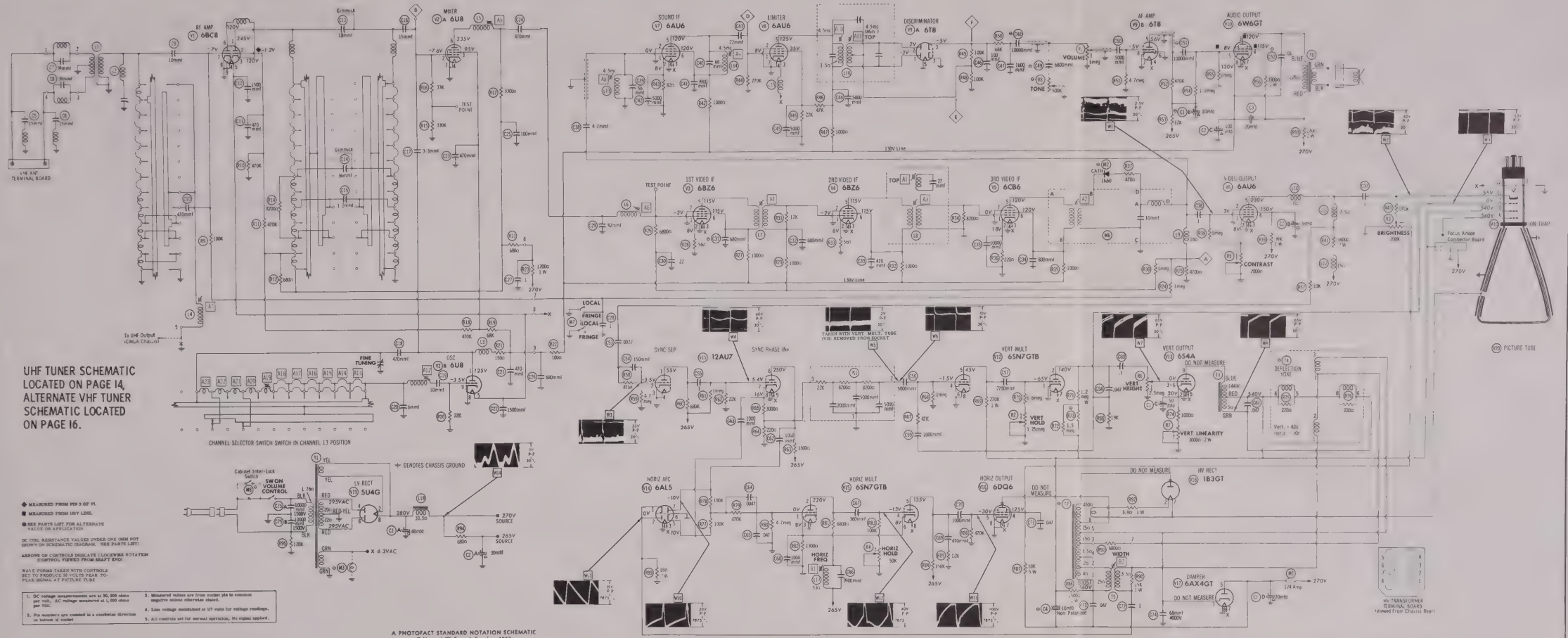
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

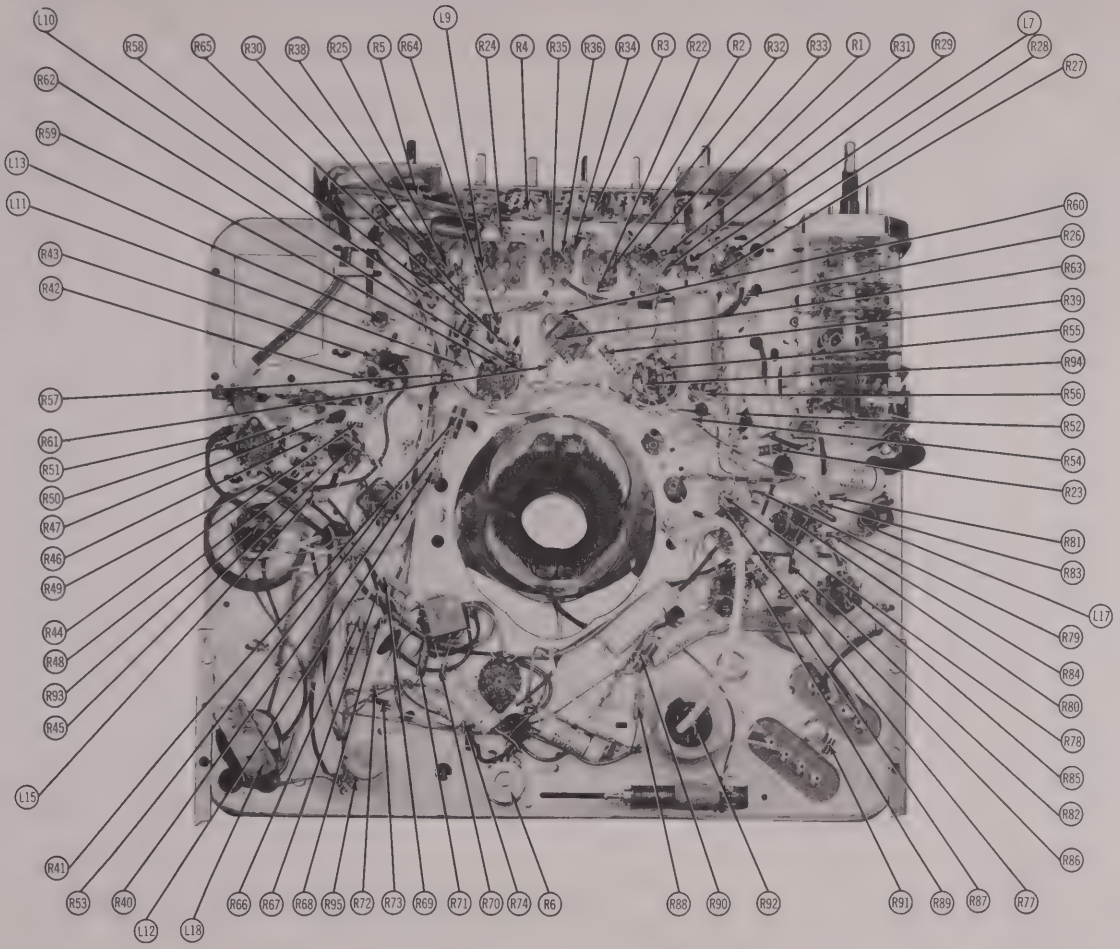
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1957 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

G670 R

DATE 1-57 SET 344 FOLDER 8


UHF TUNER SCHEMATIC LOCATED ON PAGE 14, ALTERNATE VHF TUNER SCHEMATIC LOCATED ON PAGE 16.
CHANNEL SELECTOR SWITCH SWITCH IN CHANNEL 13 POSITION
◆ MEASURED FROM PIN 3 OF V1.
■ MEASURED FROM 130V LINE.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. SEE PARTS LIST!
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END.
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt. AC voltage measured at 1,000 ohms per VDC.
2. Pin numbers are counted in a clockwise direction as bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.
DENOTES CHASSIS GROUND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1957
MAGNAVOX CHASSIS CMUA475BB, CMUA476BB, CMUA479BB, CMUA480BB, CMUA481BB, CTA475BB, CTA476BB, CTA479BB, CTA480BB, CTA481BB (600 Series)

MAGNAVOX CHASSIS CMUA475BB, CMUA476BB, CMUA479BB, CMUA480BB, CMUA481BB, CTA475BB, CTA476BB, CTA479BB, CTA480BB, CTA481BB (600 Series)



DENVER, COLORADO

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TUBE PLACEMENT CHART

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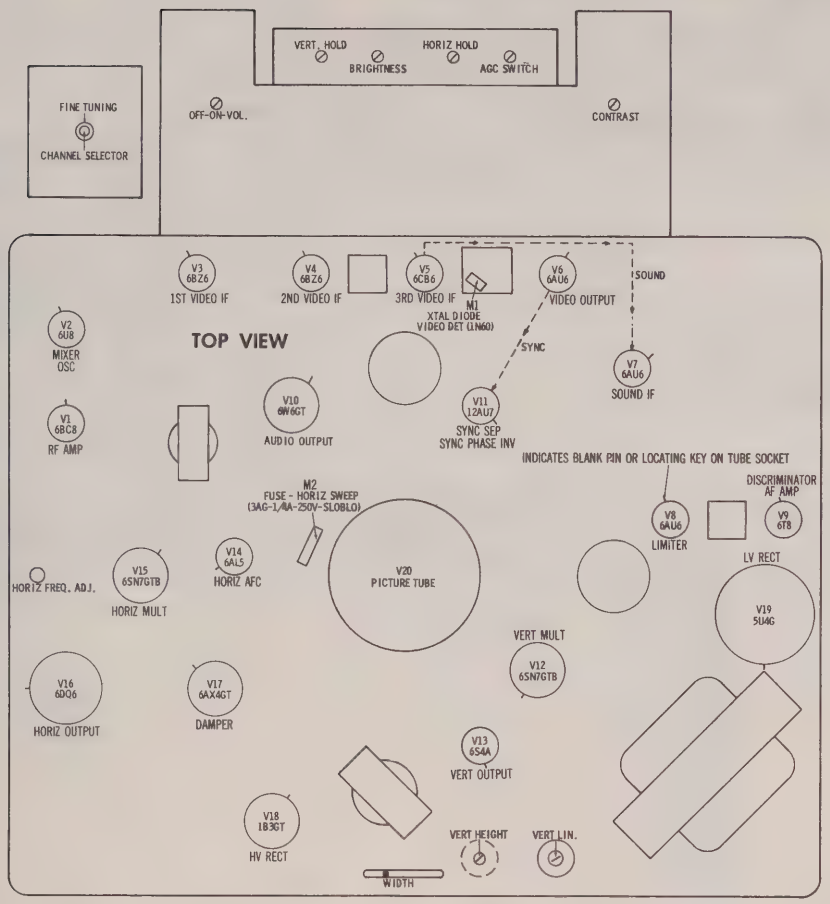
3924 MEADE ST.
DENVER, COLORADO



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V10
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V20
Has pic, no sound - V7, V8, V9, V10

SYNC FAILURE
No vert. sync - V11, V12
No horiz. sync - V11, V14, V15
No vert. or horiz. sync -V11

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, Fuse (M1)
No vertical deflection - V12, V13
Poor vert. linearity or foldover - V12, V13
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19
Vert. off freq. - V11, V12
Horiz. off freq. - V11, V14, V15

MAGNAVOX CHASSIS CMUA475BB, CMUA476BB, CMUA479BB, CMUA480BB, CMUA481BB, CTA475BB, CTA476BB, CTA479BB, CTA480BB, CTA481BB (600 Series)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped away from the chassis. Do not remove the horizontal multivibrator tube (V15) to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt battery to the ungrounded side of C30.
Connect positive side to chassis.
In step 1 it is possible to obtain two settings of A1 at which two maximum attenuations will occur. Correct adjustment will be indicated when 47.25MC marker is centered in the trap and the core is farthest out of the coil.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (grid) of 6BZ6 (V3). Low side to chassis.	43.0MC (10MC Swp)	47.25MC	Any unused high band channel	Vert. Amp. thru 10K to point (A). Low side to chassis.	A1	Couple a second generator to point (B) to provide markers. Adjust to center 47.25MC marker in trap notch as in Fig.1. Use enough sweep output so that trap notch is visable on scope.
2.	"	"	"	42.75MC 45.0MC 45.75MC 47.25MC	"	"	A2, A3, A4	Attenuate sweep generator output for 2 volts peak to peak on scope. Adjust for response similar to Fig. 1. Adjust A2 for maximum gain and MINIMUM tilt. A3 positions 45.75MC marker. A4 positions 42.75MC marker. Recheck A1 adjustment for correct 47.25MC position. See Fig. 1.
3.	"	High side to point (B). Low side to chassis.	"	"	"	"	A5, A6	Adjust A5 for maximum gain and to place 45.75MC marker at 50% on response curve as in Fig. 2. Adjust A6 for maximum amplitude and correct tilt. Repeat adjustment of A5 and A6 (if necessary) several times to obtain response within limits in Fig. 2.
4.	Fig. 3	Thru matching network (Fig.3) to VHF antenna terminals.	213MC (10MC Swp)	"	13	Vert. Amp. thru 10K to point (A). Low side to chassis.		Couple marker generator loosely to pin 1 (grid) of 6BZ6 (V3). Check for response similar to Fig. 2 on all VHF channels. Response should be within limits shown by dotted lines. If necessary, repeat steps 1 thru 4.
			207MC (10MC Swp)		12			
			201MC (10MC Swp)		11			
			195MC (10MC Swp)		10			
			189MC (10MC Swp)		9			
			183MC (10MC Swp)		8			
			177MC (10MC Swp)		7			
			85MC (10MC Swp)		6			
			79MC (10MC Swp)		5			
			69MC (10MC Swp)		4			
			63MC (10MC Swp)		3			
			57MC (10MC Swp)		2			
5.	1000Ω Carbon Resistor	High side to point C. thru 1000Ω. Low side to chassis.	43MC (10MC Swp)	45.75MC	UHF	"	A7	Turn tuner to UHF position. Adjust A7 to place 45.75MC marker at 50% on high frequency slope of response curve (Fig.2).

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.005MFD	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	4.5MC (Unmod)	Any unused channel	DC probe thru 10K to point (E). Common to chassis.	A8, A9, A10	Adjust for maximum output. Keep input signal at lowest point possible for an accurate indication.
7.	"	"	"	"	DC probe thru 10K to point (F). Common to chassis.	All	Adjust for MINIMUM deflection. A positive and negative reading will be obtained on either side of the correct setting.

ALIGNMENT INSTRUCTIONS (cont)

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VHF OSCILLATOR ALIGNMENT

Loosely couple an RF signal generator to the grid of the first video IF amplifier tube (V3) and tune it accurately to 45.75MC. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Fig. 3	Thru matching network (Fig.3) to antenna terminals.	213MC (10MC Swp)	211.25MC 45.75MC	13	Vert. Amp. thru 10K to point (A). Low side to chassis.	A12	Adjust so that video RF and video IF markers coincide on response curve.
9.	"	"	207MC (10MC Swp)	205.25MC 45.75MC	12	"	A13	Adjust position of loops so that video RF and video IF markers coincide on response curve.
			201MC (10MC Swp)	199.25MC 45.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 45.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 45.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 45.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 45.75MC	7		A18	
10.	"	"	85MC (10MC Swp)	83.25MC 45.75MC	6	"	A19	Adjust so that video RF and video IF markers coincide on response curve.
11.	"	"	79MC (10MC Swp)	77.25MC 45.75MC	5	"	A20	Adjust (compress or expand coil turns) so that video RF and video IF markers coincide on response curve.
			69MC (10MC Swp)	67.25MC 45.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 45.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 45.75MC	2		A23	

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be required in the field.

UHF TUNER ALIGNMENT

The UHF portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver is not recommended in the field.

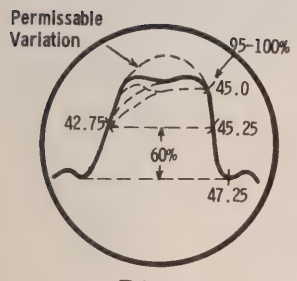


FIG.1

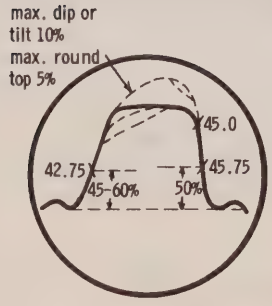


FIG.2

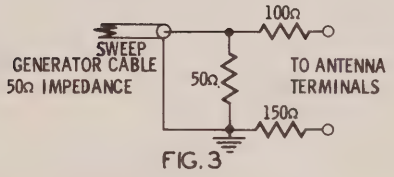


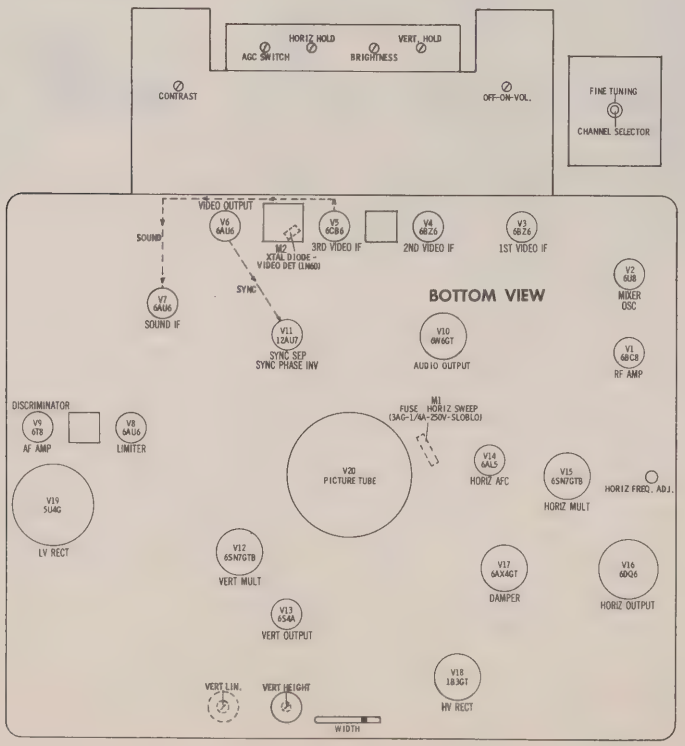
FIG.3

MAGNAVOX CHASSIS CMUA475BB, CMUA476BB, CMUA479BB, CMUA480BB, CMUA481BB, CTA475BB, CTA476BB, CTA479BB, CTA480BB, CTA481BB (600 Series)

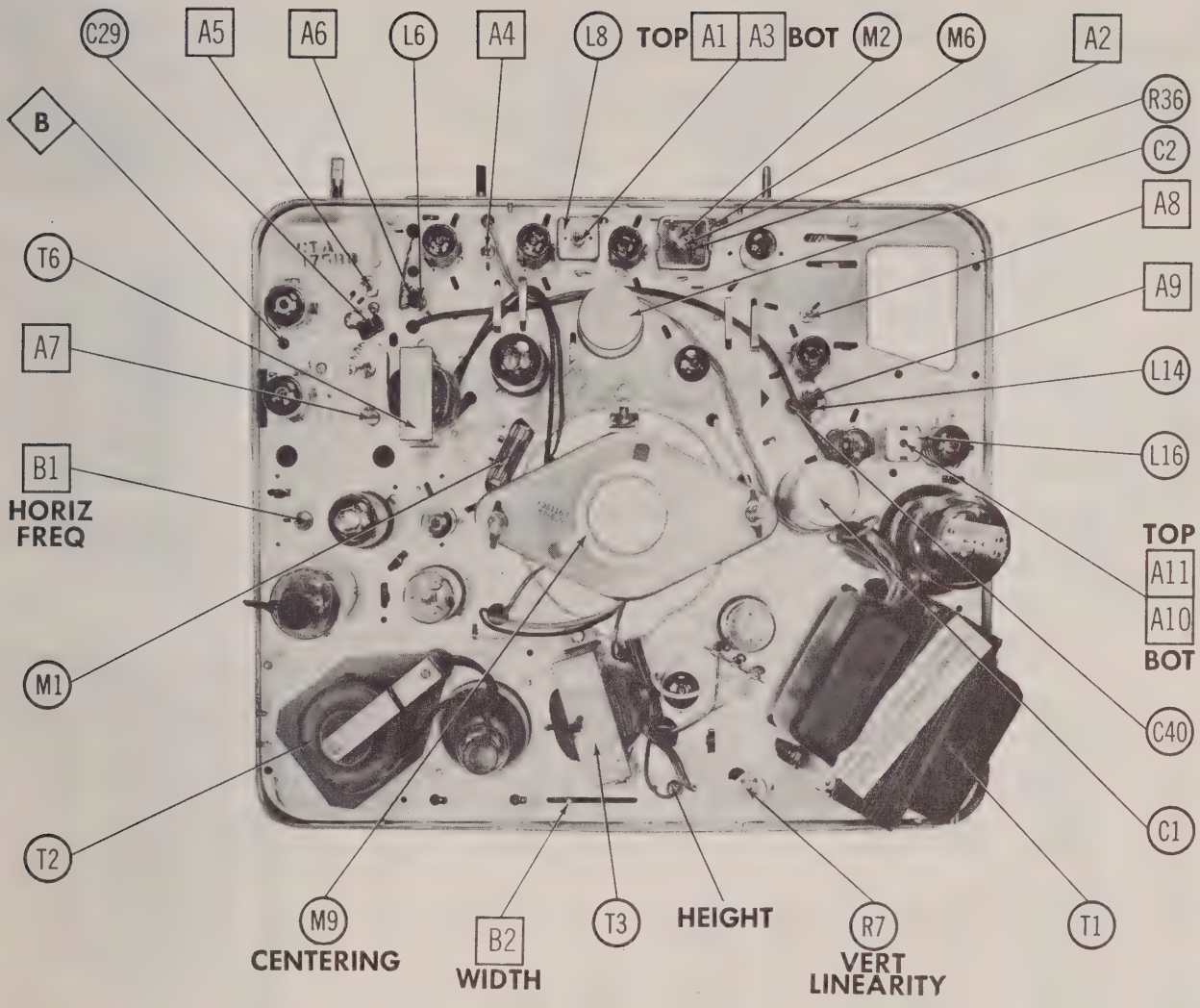
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BC8	†1900Ω	250K	INF	0Ω	.1Ω	INF	1Meg	0Ω	0Ω
V2	6U8	■ 250Ω	360K	■ 68K	0Ω	.1Ω	†5200Ω	0Ω	0Ω	22K
V3	6BZ6	1Meg	56Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V4	6BZ6	1Meg	56Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V5	6CB6	.1Ω	220Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V6	6AU6	1Meg	0Ω	.1Ω	0Ω	†5600Ω	†39K	● 70Ω		
V7	6AU6	.5Ω	0Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	82Ω		
V8	6AU6	270K	0Ω	.1Ω	0Ω	■ 1000Ω	■ 40K	0Ω		
V9	6T8	100K	100K	200K	.1Ω	0Ω	0Ω	0Ω	4.7Meg	†480K
V10	6W6GT	TP	0Ω	†500Ω	†3600Ω	550K	TP	.1Ω	50K	
V11	12AU7	†680K	4.7Meg	0Ω	0Ω	0Ω	†4000Ω	22K	3200Ω	.1Ω
V12	6SN7GTB	■ 1.8Meg	*1.5Meg	0Ω	1Meg	*270K	0Ω	.1Ω	0Ω	
V13	6S4A	NC	● 2500Ω	● 1.3Meg	0Ω	.1Ω	● 1.3Meg	NC	NC	*3000Ω
V14	6AL5	18Ω	18Ω	.1Ω	0Ω	5Meg	0Ω	5Meg		
V15	6SN7GTB	4.7Meg	†7500Ω	1300Ω	●110K	†150K	1300Ω	0Ω	.1Ω	
V16	6DQ6	NC	0Ω	NC	†10K	470K	TP	.1Ω	0Ω	TOP CAP *25Ω
V17	6AX4GT	NC	NC	5Meg	NC	†40Ω	NC	.1Ω	0Ω	
V18	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TOP CAP *475Ω
V19	5U4G	NC	60K	TP	20Ω	NC	22Ω	TP	60K	
V20	21ATP4	0Ω	13K	PIN 6 *1500Ω	PIN 10 *1500Ω	PIN 11 ● †320K	PIN 12 .1Ω			

† MEASURED FROM PIN 8 OF V19.
■ MEASURED FROM 130V LINE.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
* MEASURED FROM PIN 3 OF V17.
TP TIE POINT
NC NO CONNECTION



TUBE PLACEMENT CHART



CHASSIS—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the horizontal hold control to the mid-range position. Turn the horizontal frequency slug (B1) slowly clockwise while switching off and on channel until the picture just loses sync. Turn B1 counter clockwise until picture just falls into sync, then turn an additional ½ turn clockwise. The picture should hold sync at both extreme ends of the horizontal hold control.

If necessary, readjust B1 and recheck for sync and pull-in as above. Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BC8	
V2	Mixer-Oscillator	6U8	
V3	1st Video IF Amplifier	6BZ6	
V4	2nd Video IF Amplifier	6BZ6	
V5	3rd Video IF Amplifier	6CB6	
V6	Video Output	6AU6	
V7	Sound IF Amplifier	6AU6	
V8	Limiter	6AU6	
V9	Discriminator-AF Amp	6T8	
V10	Audio Output	6W6GT	
V11	Sync Separator-Sync Phase Inverter	12AU7 OR 6SN7GTB	
V12	Vert. Mult.	6BH8	
V13	Vert. Output	6BA6	
V14	Horiz. AFC	6AL5	
V15	Horiz. Mult.	6SN7GTB	
V16	Horiz. Output	6DQ6B	
V17	Damper	6AX4GT	
V18	HV Rectifier	1B3GT	
V19	LV Rectifier	5U4G	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	MAGNAVOX PART No.	GE PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V20	21ATP4	21ATP4	21ATP4A 21ATP4	21ATP4 21ATP4A	1. Aluminized 2. Silver screen -85

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	
C1A	440	350	370021-53	RE1004		FP375 5 TC62		T-110 MT-0550		
B	410	350								
C	50	50						Q-030		
D	470	150	370021-55	AF313-114-70				MT-25100		
C2A	430	350								
B	45	350								
C	4100	200								
C3	30	350	370027-20	PR5450V20	HR2035	TC65	TD-30-350	FM-4530	TVA-1508	
C4	10	350	370027-26	PR5350VNP		TC65		MT-4520		
			(Note 2)			TC65		MT-4530		

Note 1. C1B is not used in chassis CTA, CMUA479BB.
Note 2. Non-polarized unit.
* Connect negative leads together

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	15		2302007-8	NPO-S15	DS-150	TZ1L	KD-15		5TCC-Q15	
C6	15		2302007-8	NPO-S15	DS-150	TZ1L	KD-15		5TCC-Q15	
C7	39		2302175-20	N750-S239	TCN-39	N03L	TCT-39			
C8	39		2302175-20	N750-S239	TCN-39	N03L	TCT-39			
C9	15		2302121-217	NPO-S15	DS-150	TZ09	ED-15	ET-541	5TCC-Q1	
C10	470		2302175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C11	470		2302175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C12	470		2302175-8	BPD-0005	DD-153	K071	ED-1500	UC-5315	5HK-D15	
C13	.10		2302116-4							
C14	.36									
C15	.01		2302121-217							
C16	15		2302007-8	NPO-S15	DS-150	TZ1L	KD-15		5TCC-Q15	
C17	1.5		2302181-151	N750-S215	DS-1R5J	TZ08	TCD-1.5	ET-5533	5TCC-CY33	
C18	470		2302175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C19	30		2302085-126	N750-S130	TCN-30	T091	TCT-30		5TCC-Q2	
C20	8		2302082-127							
C21	470		2302175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C22	1500		2302175-10	BPD-0015	DD-152	K071	ED-1500	UC-5315	5HK-D15	
C23	470		2302175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C24	470		2302175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C25	100				TCA-100		TCS-100			
C26	680		2302116-4	DI-00068	DD-681	G065	KD680	UC-5365	5GA-T68	
C27	.01	600	2302121-13	P488N-1	DF-104	CU184P1		PT401	4TM-P1	
C28	.1	300	2302035-12	P588N-1	DF-104	CU184P1		PT601	4TM-P1	
C29	33	500	2302336-238	EBR-00033	TCB-33	ER5EQ83	TCG-33	PT4932	3TM-P22	
C30	22	200	2302023-15	P288N-22		CU2F223		PT4932	3TM-P22	
C31	680		2302116-4	DI-00068	DD-681	G065	KD-680	UC-5365	5GA-T68	Note 3
C32	680		2302116-4	DI-00068	DD-681	G065	KD-680	UC-5365	5GA-T68	
C33	470		2302116-13	DI-00047	DD-471	G060	KD-470	UC-5347	5GA-T47	
C34	680		2302116-4	DI-00068	DD-681	G065	KD-680	UC-5365	5GA-T68	
C35	10000		2302175-6	BPD-01	DD-103	K083	KD-01	DC-511	5HK-E1	
C36	.01	300	2302035-12	P588N-1	DF-104	CU184P1		PT601	4TM-P1	
C37	.1	200	2302023-12	P588N-1	DF-104	CU182P1		PT401	3TM-P1	
C38	6.7		2302121-223	T750-6R7	TCZ-6R7	T207	TCG-6.7	ET-5547	5TCC-T47	
C39	56		2302116-23	N750-S156	TCN-56	N036	TCT-56			
C40	68		2302116-7	N750-D168	TCN-68	N068	TCT-68		5TCU-Q68	
C41	1800		2302175-31	BPD-0018	DD-402	K078	ED-1800	UC-5240	5GA-D39	
C42	5000		2302175-1	BPD-005	DD-502	K080	ED-005	DC-525	5HK-D5	
C43	5000		2302175-42	S123	DW-xxx	TP23	GP-122	UC-5432	5GA-Q22	
C44	5000		2302175-1	BPD-005	DD-502	K080	ED-005	DC-525	5HK-D5	
C45	5000		2302175-1	BPD-005	DD-502	K080	ED-005	DC-525	5HK-D5	
C46	100		2302007-46	S1D0	DE-101	TP34	GP-100	UC-531	5GA-T1	
C47	1000		2302116-8	DI-001	DD-102	G069	KD-102	UC-521	5GA-D1	
C48	10000		2302175-6	BPD-01	DD-103	K083	KD-01	DC-511	5HK-E1	Note 4
C49	6800		2302175-39	BPD-0068	DD-682	K068	ED-0068		5HK-D68	Note 5
C50	5000		2302175-1	BPD-005	DD-502	K080	ED-005	DC-525	5HK-D5	
C51	10000		2302175-6	BPD-01	DD-103	K083	KD-01	DC-511	5HK-E1	Note 6
C52	10000		2302175-6	BPD-01	DD-103	CU184P1		PT601	4TM-P1	Note 7
C53	.01	600	2302121-7	BPD-0023	DE-222	CU182P1	GP-222	PT2222	4TM-D22	
C54	.0033	400	2302121-4	S123	DW-xxx	TP23	GP-122	UC-5432	5GA-Q22	
C55	150	500	2302229-134	S150	DE-151	122S7I5	ED-150	MC236	1TM-S15	
C56	.1	400	2302031-13	P488N-1	DF-104	CU184P1		PT401	4TM-P1	
C57	5000		2302118-13	1454-001		IDR5D6		MC1645	MS-25	
C58	2700	500	2302102-248	1454-0027		1R5T47			MS-227	
C59	.047	400	2302121-7							
C60	1000		2302118-8	1454-001		1RSD1	ED-1000	MC2255	MS-21	
C61	.01	600	2302121-13	P488N-1	DF-104	CU184P1		PT401	4TM-P1	
C62	.1	400	2302031-11	BPD-06	DF-503	CU184S7		PT2417	4TM-S47	Note 8
C63	1000		2302118-8	1454-001		1RSD1	ED-1000	MC2255	MS-21	
C64	1000		2302118-8	1454-001		1RSD1	ED-1000	MC2255	MS-21	
C65	.0047	400	2302121-5	1454-0047		1RS347			MS-247	
C66	.047	300	2302122-5							
C67	3300	500	2302229-466	1454-0059		1RS319			MS-239	
C68	360	500	2302229-343	1454-0039		1RS336			MS-236	
C69	1000		2302118-8	1454-001		1RSD1	ED-1000	MC2255	MS-21	
C70	470	500	2302229-346	1454-0047	DE-471	1RS347	ED-470		MS-247	
C71	1000		2302118-8	DI-001	DD-102	G069	ED-1000	MC255	5GA-D1	
C72	.047	400	2302121-11	BPD-05	DF-503	CU184S7		PT2417	4TM-S47	
C73	.01	600	2302121-13	P488N-1	DF-104	CU182P1		PT601	4TM-P1	
C74	.047	400	2302031-11	BPD-05	DF-503	CU184S7		PT2417	4TM-S47	

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C74	68	4000	2302175-23		HVD-68-68					
C75A	10000	1500	2302219-3		P588N-01	DD16-103	CUB1G81	PT161	MB-S1	
B	10000	1500			P588N-01	DD16-103	CUB1G81	PT161	MB-S1	

Note 3. Some versions may use 800MMF in this application (Part #2302116-14)
Note 4. Chassis CTA/CMUA475BB and 481BB use 9000MMF in this application (part #2302175-D).
Note 5. Used in chassis CTA/CMUA476BB only
Note 6. Chassis CTA/CMUA476BB, 480BB and 481BB use .0023MFD in this application (part #2302121-3).
Note 7. Chassis CTA/CMUA476BB uses a 4700MMF in this application. Chassis CTA/CMUA479BB, 480BB and 481BB use .015MFD
Note 8. Not used in chassis numbers ending in CC.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA						INSTALLATION NOTES
	RESIST ANCE	WATTS	MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.		
R1A	1Meg		D220128-45	AB-70	A47-1Meg-2	Q33-1P7	U53	Volume	
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R1A	
C	Switch		Not Req.	KB-1	EWE-12	U8-38	Not Req.	Attach to R1A	
R2A	2.25Meg		D220129-9	AB-74S2		Q31-1S8	TA3S8L	Vert. Hold	
B	Shaft		Not Req.	AK-8		VQ	Not Req.	Attach to R3A - Note 2	
R3A	200K		D220129-11	AB-46		Q31-139	TA3S4L	Brightness control	
B	Shaft		Not Req.	AK-8		VQ	Not Req.	Attach to R3A - Note 2	
R4A	50K		D220129-7	AB-31		Q31-133	TA36L	Horiz. Hold	
B	Shaft		Not Req.	AK-8		VQ	Not Req.	Attach to R4A - Note 2	
R5A	3000 Ω		D220126-45	AB-705	A47-2000-8	Q27-1J1	U6	Contrast control	
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R5A	
R6A	2.5Meg		D220146-2	B-83	A47-2.5Meg-2	Q31-259	TA3S5L	Vert. Height	
B	Shaft			AK-1	FK3-46	RQ	Not Req.	Attach to R6A	
R7	3000Ω	2	220120-3		39-3000		FL-6K	Vert. Linearity	
R8	500K	1	220128-48					Tone Control - Note 1	

Note 1. Used in Ch. CTA/CMUA476BB only.
Note 2. File to desired size.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MAGNAVOX PART No.	IRC PART No.	
R9	100K		2302104-88	BTB-100K	
R10	470K		2302104-94	BTB-470K	
R11	470K		2302104-94	BTB-470K	
R12	680Ω		2302104-60	BTB-680	
R13	680Ω		2302104-60	BTB-680	
R14	8200Ω		2302104-72	BTB-8200	
R15	330K		2302104-92	BTB-330K	
R16	33K		2302104-80	BTB-33K	
R17	3300Ω		2302104-52	BTB-3300	
R18	470K		2302104-94	BTB-470K	
R19	68K		2302104-84	BTB-68K	
R20	22K		2302104-78	BTB-22K	
R21	150Ω		2302104-53	BTB-156	
R22	100Ω		2302104-50	BTB-100	
R23	1200Ω	1	2302104-53	BTB-1200	
R24	1Meg		2302104-98	BTB-1Meg	
R25	4700Ω 5%		2302094-175	BTB-4700 5%	
R26	6800Ω 5%				
R27	1000Ω		2302104-62	BTB-1000	
R28	330Ω		2302104-57	BTB-330	
R29	1000Ω		2302104-62	BTB-1000	
R30	1Meg		2302104-98	BTB-1Meg	
R31	12K 5%				
R32	1000Ω		2302104-62	BTB-1000	
R33	10K		2302104-47	BTB-56	
R34	6300Ω 5%				
R35	1000Ω		2302104-62	BTB-1000	
R36	230Ω		2302104-54	BTB-220	
R37	470Ω			BTB-470	
R38	1Meg		2302104-98	BTB-1Meg	
R39	34K	1	2302181-51	BTB-34K	
R40	270K		2302104-91	BTB-270K	
R41	56000Ω	3	2302106-71	BTB-5600	
R42	1000Ω		2302104-62	BTB-1000	
R43	82Ω		2302104-49	BTB-82	
R44	270K		2302104-91	BTB-270K	
R45	22K		2302104-78	BTB-22K	
R46	47K		2302104-87	BTB-47K	
R47	1000Ω		2302104-62	BTB-1000	
R48	100K		2302104-86	BTB-100K	
R49	100K		2302104-86	BTB-100K	
R50	68K		2302104-84	BTB-68K	
R51	6.7Meg		2302104-106	BTB-6.7Meg	
R52	470K		2302104-94	BTB-470K	
R53	12K		2302104-75	BTB-12K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MAGNAVOX PART No.	IRC PART No.	
R54	1.2Meg		2302094-233	BTB-1.2Meg 5%	
R55	1Meg 5%		2302094-231	BTB-1Meg 5%	
R56	3300Ω	1	220105-68	BTA-3300	
R57	10K		2302104-74	BTB-10K	
R58	470K		2302104-94	BTB-470K	
R59	4.7Meg		2302104-106	BTB-4.7Meg	
R60	680K		2302104-96	BTB-680K	
R61	1Meg		2302104-98	BTB-1Meg	
R62	220K		2302104-90	BTB-220K	
R63	3300Ω 5%		2302094-171	BTB-3300	
R64	220Ω		2302104-54	BTB-220	
R65	3000Ω 5%		2302094-170	BTB-3000	
R66	33K 5%			BTB-33K	
R67	47K		2302104-82	BTB-47K	
R68	1Meg		2302104-98	BTB-1Meg	
R69	270K	1	220105-84	BTA-270K	
R70	1.6Meg 5%		2302094-236	BTB-1.6Meg 5%	
R71	1.2Meg	1	220105-99	BTA-1.2Meg	
R72	1.5Meg		2302104-100	BTB-1.5Meg	
R73					
R74	1000Ω		2302104-62	BTB-1000	
R75	330Ω		2302104-54		
R76	220Ω		2302104-54	BTB-220	
R77	10K		2302104-74		
R78	100K		2302104-86	BTB-100K	
R79	470K		2302104-94	BTB-470K	
R80	4.7Meg		2302104-106		
R81	68000Ω		2302094-179		
		5%			
R82	3000 5%		2302094-163		
R83	100K 5%		2302094-207		
R84	150K 5%		2302094-211		
R85	12K 5%		2302094-195		
R86	470K		2302104-94		
R87	10K	5	240071-9	PW10-10K	
R88	1500Ω	1	220105-64	BTA-1500	
R89	18Ω	2	220105-41		
R90	15K	1	220105-76		
R91	6900Ω		2302104-72		
R92	3.9Ω		220105-3		
R93	270Ω	2	220105-55	BTB-270	
R94	860Ω		2302104-60	BTB-680	
R95	120Ω		220105-1	BTB-120K	

* Special temperature compensation resistor.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ① 1.4A	525VCT ② 220A	5VAC ③ 3A	6.3VAC ③ 9.3A	3000T7-1	P9T33 ①	P-3059 ①			

① Fabricate new mounting.
② Tape 6.3V ③ 6.3A winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Horiz. Output Trans.	360623					A-8295 *	FLY-79 *	
		360644-1 ①					A-8295 *	FLY-79 *	
T3	Vert. Output Trans	320254-3	J1606	A-3089	224T1	V312	A-8141	26854	A-104X
T4A	Yoke (90°) Horiz. (21MH)	360617-2	DF607 ②	MDF-92 ③	231D1 ③	T90F18/43 ③	DY-16A ③	Y-16 ③	Y-4I-1 ③
B	Vert (455MH)	360617-1 ② 360619-2 ③	DF607 ③	MDF-92 ③	231D1 ③	T90F18/43 ③	DY-16A ③	Y-16 ③	Y-4I-1 ③
T5A	Width-Series Coil (.2-2.3MH)	380585-2		MWC-10				WC-24	
B	Parallel Coil (4.2-22MH)								

① Alternate Spartan part number.
② Yoke rear cover.
③ Use original yoke damping network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
8					8	8	
5					5	5	
3					3	3	
2					2	2	
1					1	1	
2 & 1					2 & 1	2 & 1	
						①	

Connect Width Coil Across
Special Notes

① If insufficient width, add capacity (50-100MMF ② 4KV MINIMUM) across horizontal yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	3.5K	3-4Ω	320068-3	J1009	A-3038	A-3849	26B50	S-52X	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MAGNAVOX PART No.	MEISSNER PART No.	MERIT PART No.	MULLER PART No.	
L6	1st. Video IF	.1Ω	.1Ω	2302634-1 ①		TV-121		6235
L7	2nd. Video IF	.1Ω	.1Ω	380581-2 ②	I7-6323	TV-130		6310
L8	3rd. Video IF	.1Ω	.1Ω	380582-3 ③	I7-5003 *	TV-139 *		6233 *
L9	Shunt Peaking Coil	1Ω		380633-4				6138
L10	Series Peaking Coil	7Ω		380632-8	19-3160			150 Microhenries
L11	Shunt Peaking Coil	7.5Ω		380632-9	19-3350	TV-185		6181
L12	Shunt Peaking Coil	15Ω		380632-7	19-4400			6136
L13	1st. Sound IF	.5Ω		380584-1	20-1004	TV-151		1469
L14	2nd. Sound IF	.5Ω		380584-2	20-1004	TV-151		1469
L15	Plate	.8Ω		380601-3	19-3000			4608
L16	Discriminator	1.9Ω	1.5ΩCT	380613-1 ④	17-3496	TV-154		6204

① Alternate part #380640-1 used in chassis numbers ending in CC.
② Alternate part #380638-1 used in chassis numbers ending in CC.
③ Alternate part #380637-1 used in chassis numbers ending in CC.
④ Alternate part #380642-1 used in chassis numbers ending in CC.
* New adaptor place.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MAGNAVOX PART No.	MEISSNER PART No.	MERIT PART No.	MULLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L17	53Ω		380579-1	19-1578	TV-163	6310			R8-5	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ^A)	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L18	220A	33.5Ω	.6 HY	320058-2	C-5037 ①		C-3336①	26C41 ①	C-17X ①

1. Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MAGNAVOX PART No.	REPLACEMENT DATA	
K1	Vert. Integrator	22K, 820Ω, 82000, 2000MMF, 5000MMF, 5000MMF	250186-1	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-110 PC-100 1U7M1 1405-01 V-1

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MAGNAVOX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	1/4A 250V	180157-30		313.250 (3AG - S/B-1/4A)	357001	MDL 1/4	4405

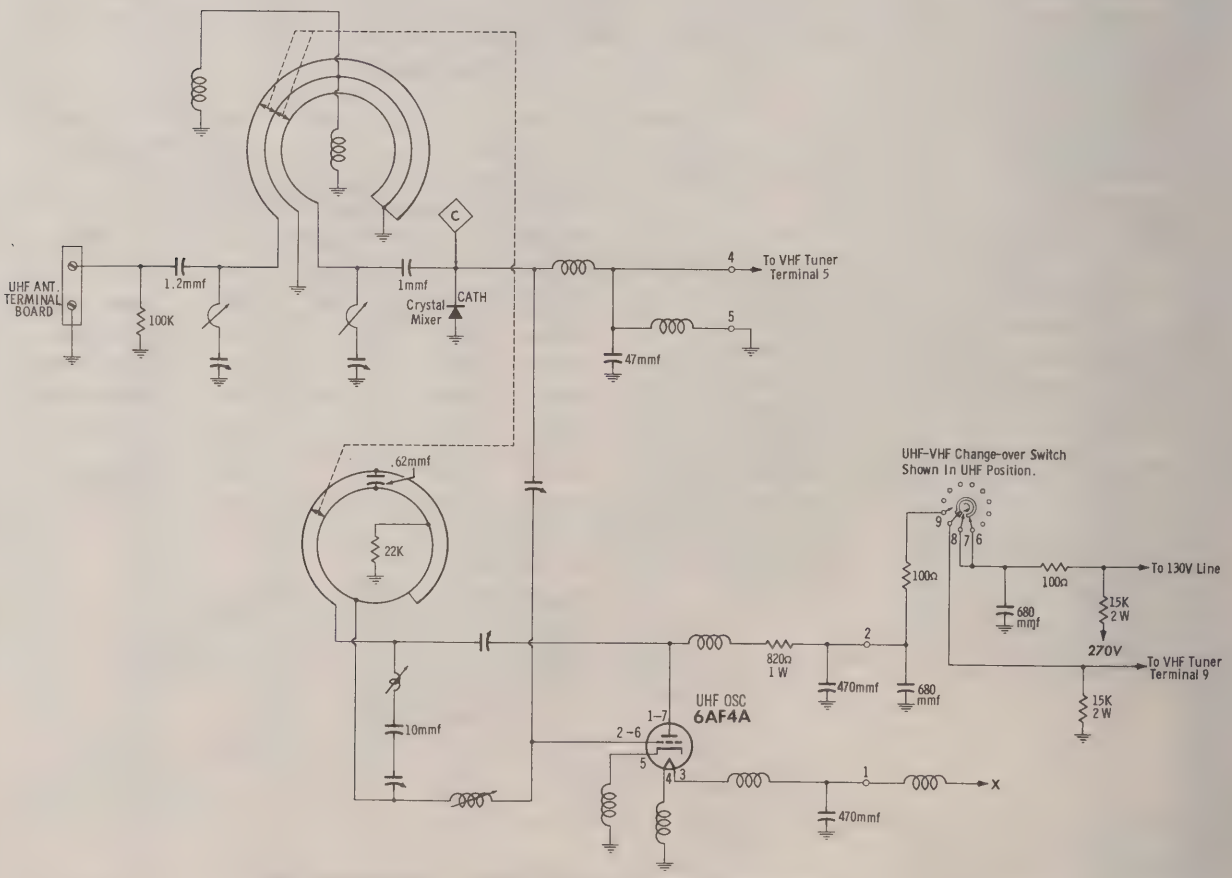
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		MAGNAVOX PART No.	SYLVANIA PART No.	
M2	1N60 *		1N60	Video Det. (Pigtail)

* Some versions may use crystal diode type 1N64 in this application.

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M3	Dial Light		Not used in some versions
M4	Tuner	700458-3	VHF - Used in chassis numbers ending in BB.
		700541	VHF-Used in chassis numbers ending in CC.
M5	Tuner	700530-1	UHF - Used in Chassis CMUA475BB, CMUA476BB, CMUA479BB, CMUA480BB, CMUA481BB
M6	Video Det.Assy.	360607-1	Includes M2, coils, R36 and capacitor
M7	Switch	160169-3	Fringe - Local (DPDT-Rotary, wafer type)
M8	Switch	160251-1	Lid interlock - Used in Chassis CTA/CMUA481BB only.
M9	Centering Device	635116-1	
M10	Ion Trap	360492-5	



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UHF Tuner Part No. 700530-1 Used With UHF Models

UHF TUNER SCHEMATIC

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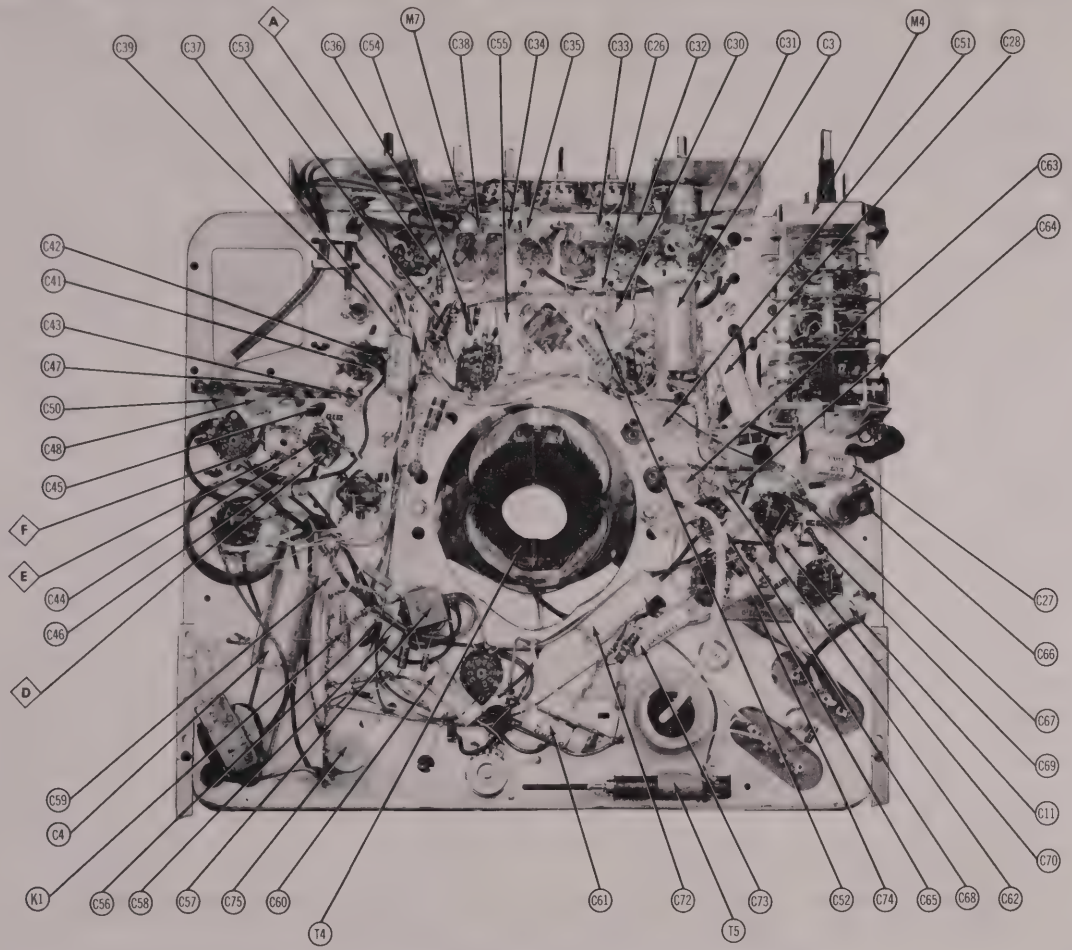
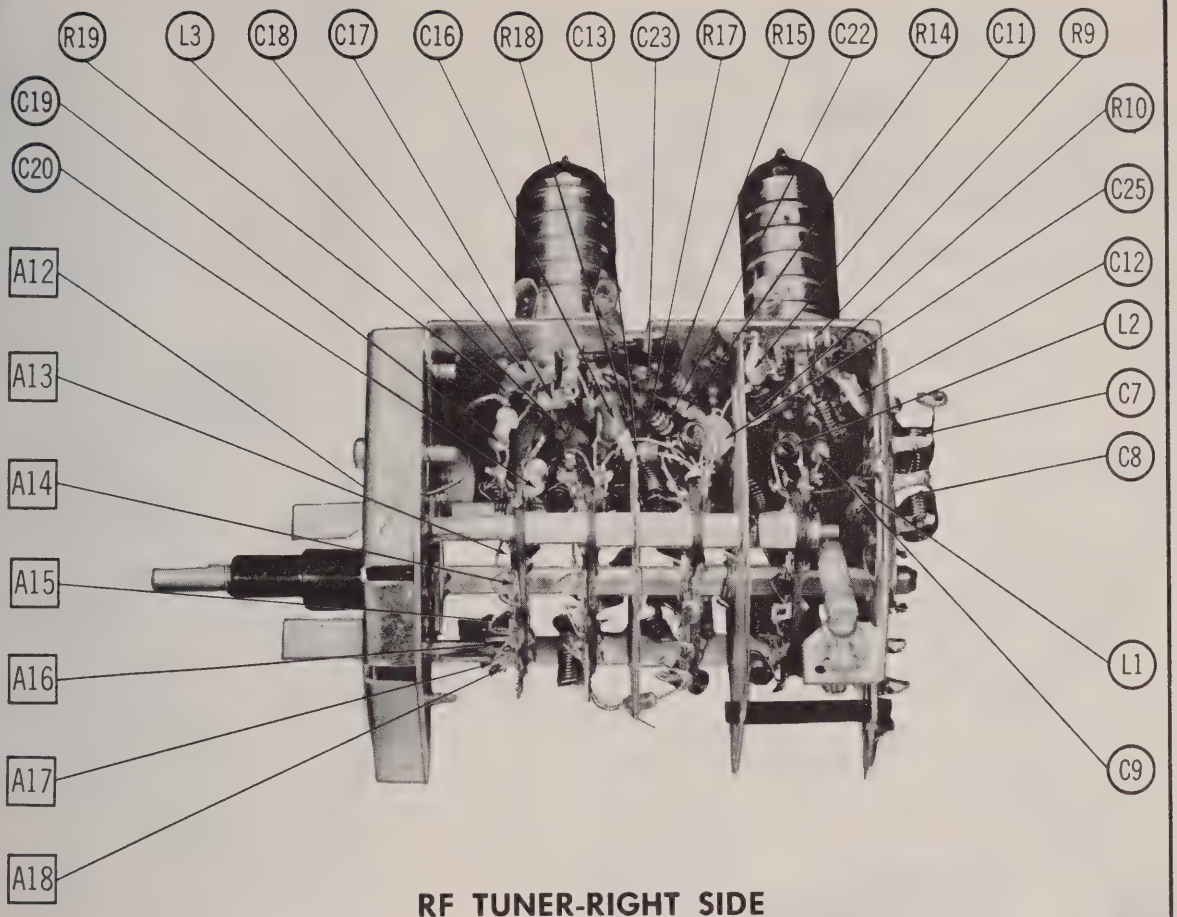
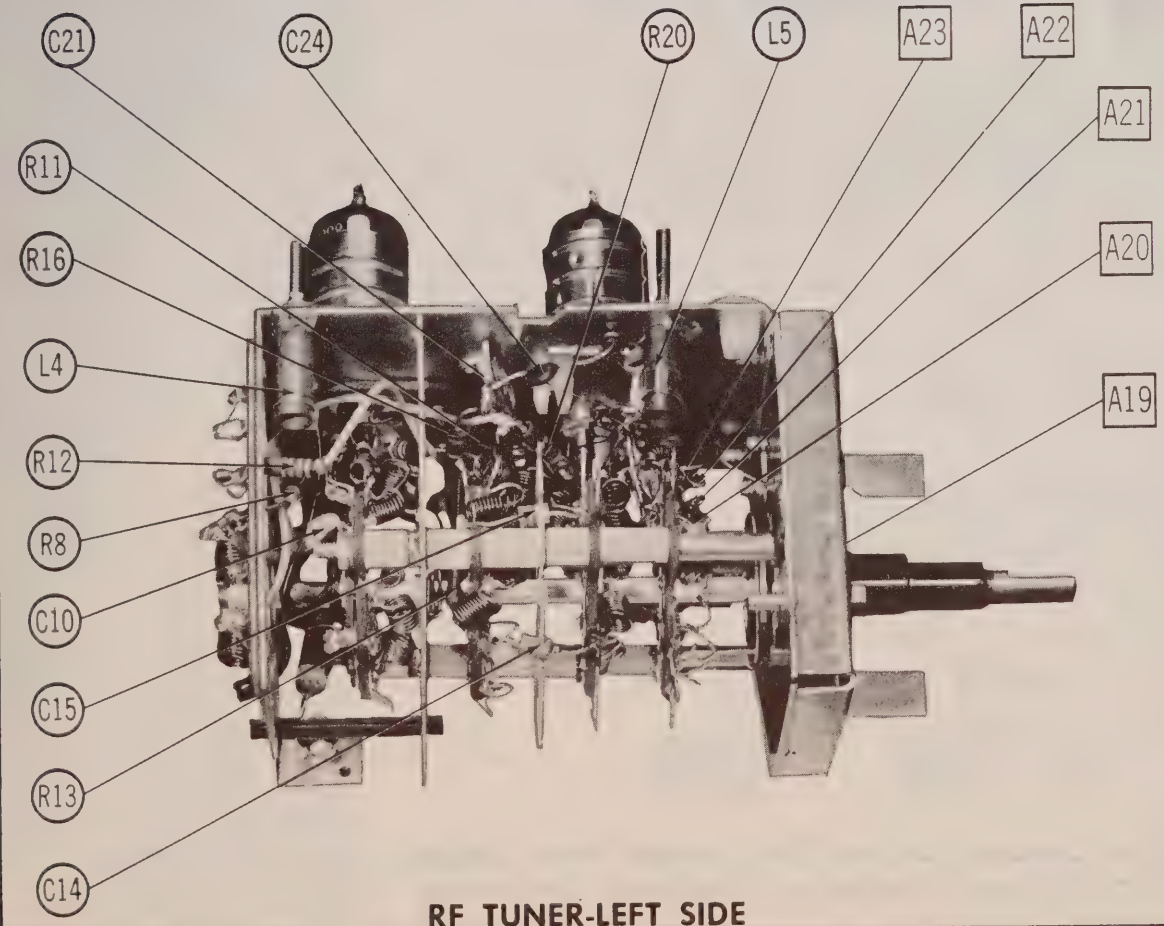
L. F. BLANKENSHIP



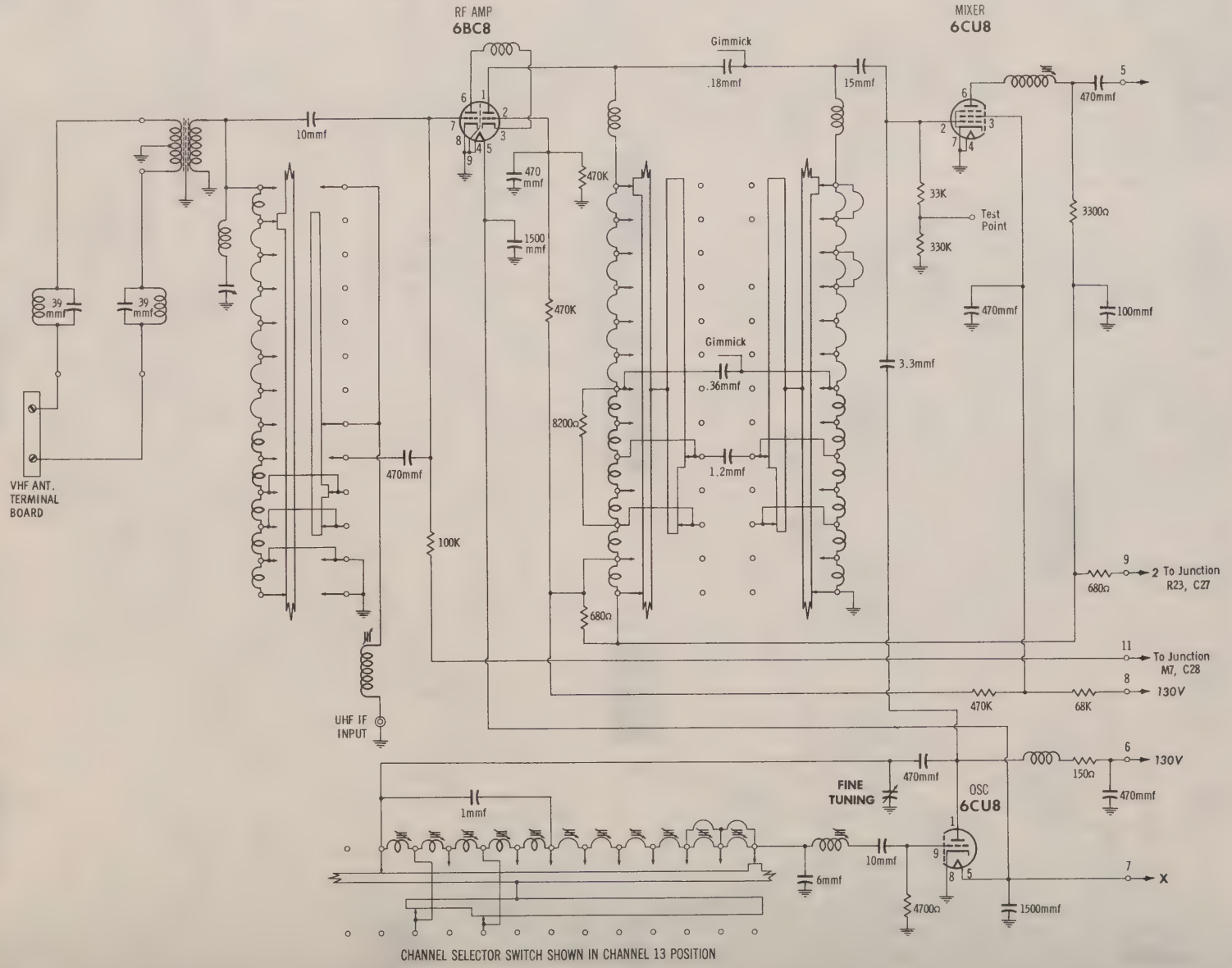
CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



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ALTERNATE VHF TUNER SCHEMATIC

MAGNAVOX
CHASSIS CR718, CR721

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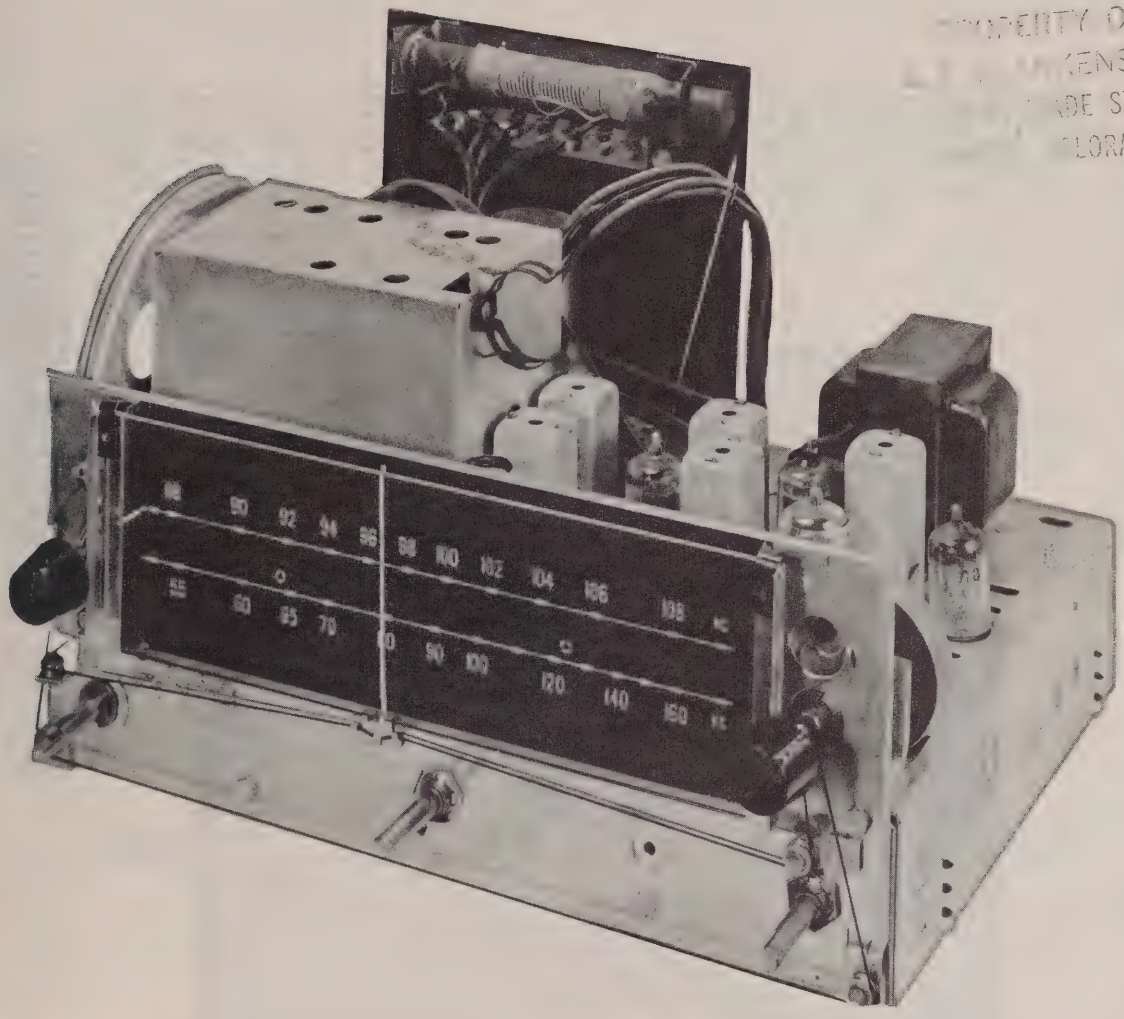
...DE ST.
...LORADO

MAGNAVOX
CHASSIS CR718, CR721



MAGNAVOX
CHASSIS CR718, CR721

TRADE NAME	Magnavox Chassis CR-718, CR-721
MANUFACTURER	Magnavox Co., 2131 Bueter Rd., Fort Wayne, Indiana
TYPE SET	Externally Powered FM-AM Tuner
TUBES (Eight)	Types 6BZ6 RF Amplifier, 6U8 FM Mixer-Osc. 6BE6 AM Converter, 6BA6 1st IF Amplifier, 6BA6 2nd FM IF Amplifier, 6AL5 Ratio Det., 12AX7 AF Amp. -Cath. Follower, 6E5 Tuning Indicator
TUNING RANGE - BROADCAST	540KC - 1620KC FM 88MC - 108MC

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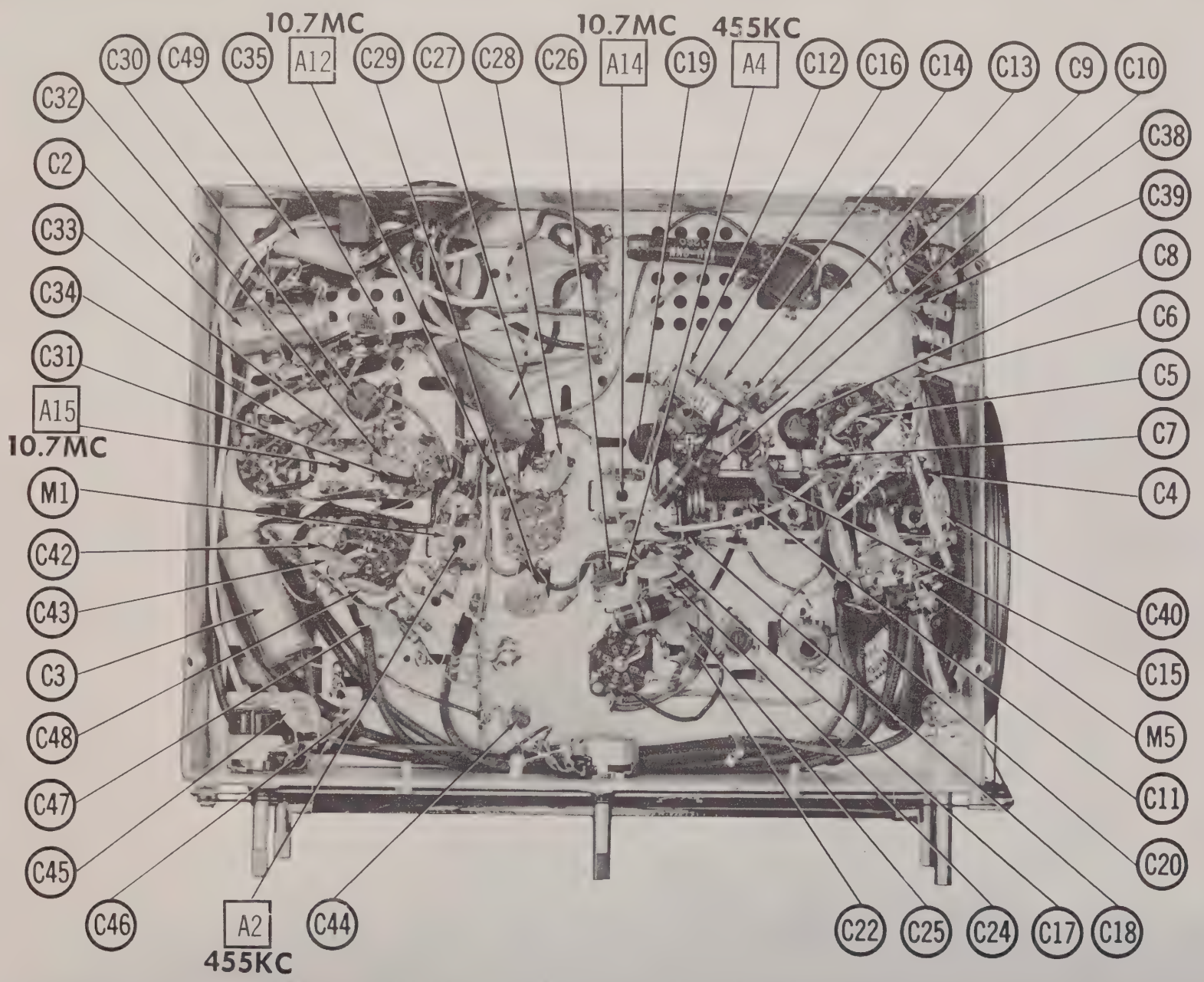
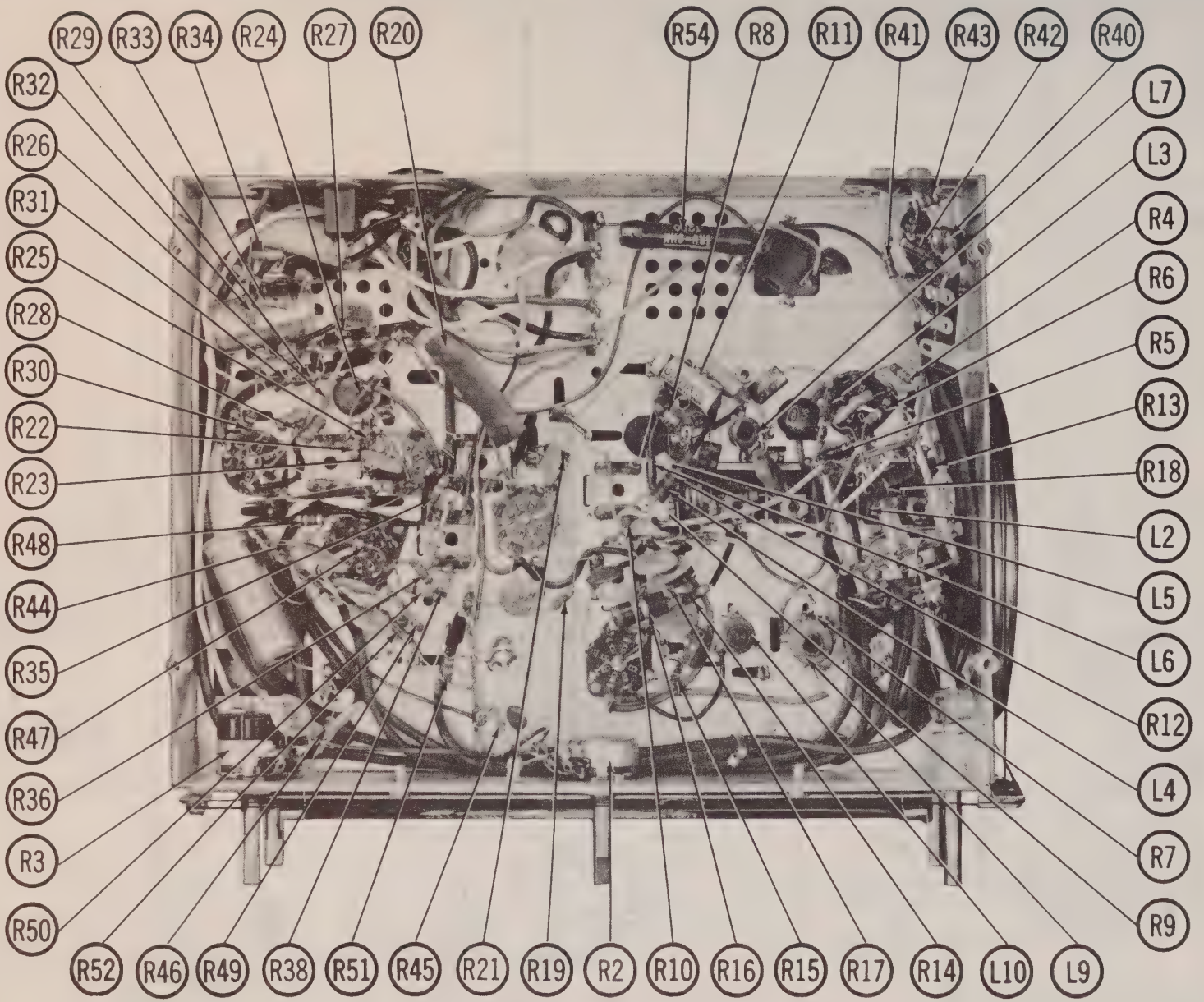
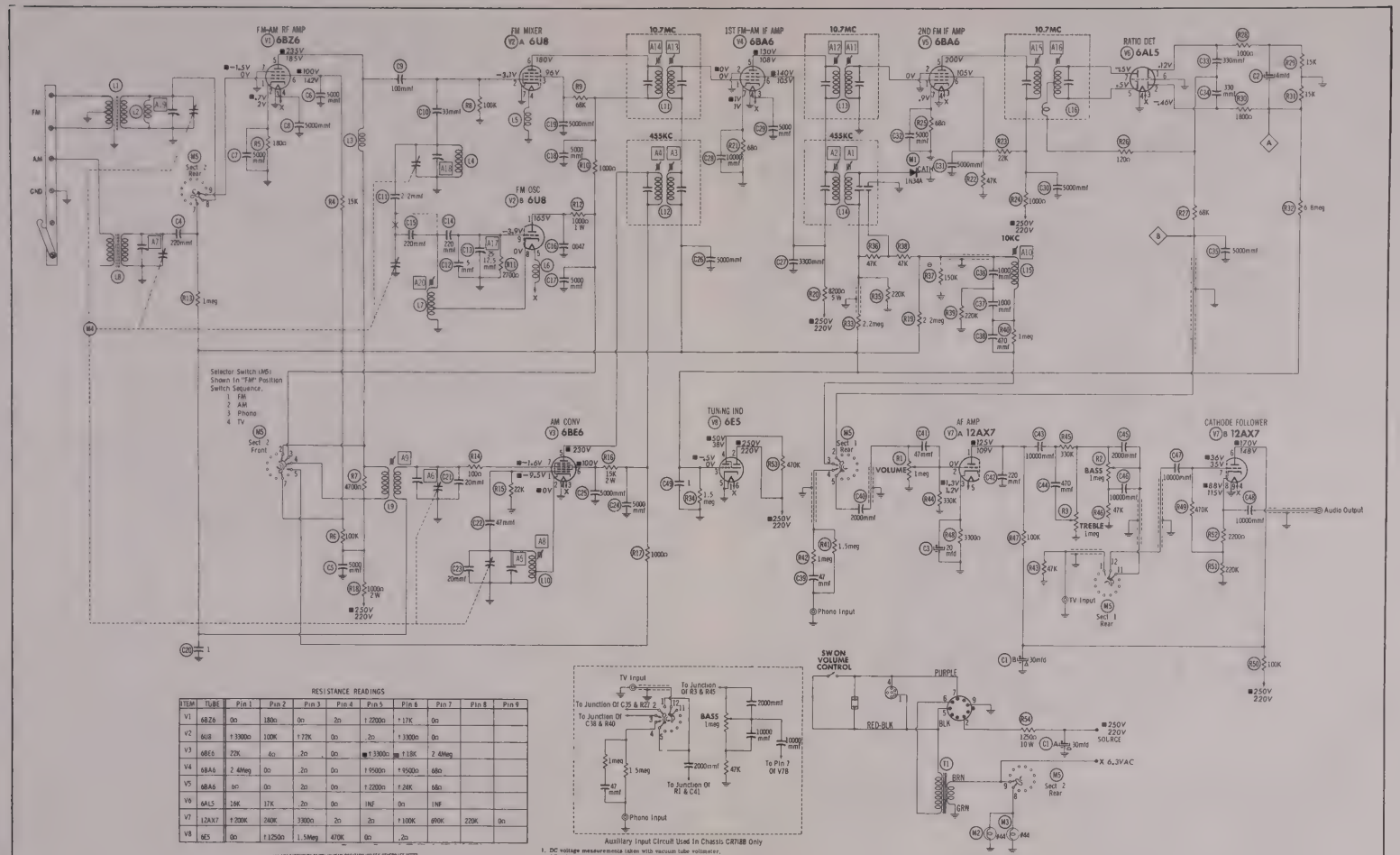


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

MAGNAVOX
Chassis CR-718



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	0Ω	180Ω	0Ω	2Ω	↑ 2200Ω	↑ 17K	0Ω		
V2	6U8	↑ 3300Ω	100K	↑ 72K	0Ω	2Ω	↑ 3300Ω	0Ω		
V3	6BE6	22K	4Ω	2Ω	0Ω	■ ↑ 3300Ω	■ ↑ 18K	2.4Meg		
V4	6BA6	2.4Meg	0Ω	2Ω	0Ω	↑ 9500Ω	↑ 9500Ω	68Ω		
V5	6BA6	0Ω	0Ω	2Ω	0Ω	↑ 2200Ω	↑ 24K	68Ω		
V6	6AL5	16K	17K	2Ω	0Ω	INF	0Ω	INF		
V7	12AX7	↑ 200K	240K	3300Ω	2Ω	2Ω	↑ 100K	690K	220K	0Ω
V8	6E5	0Ω	↑ 1250Ω	1.5Meg	470K	0Ω	2Ω			

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE NOTED
↑ MEASURED FROM PIN 7 OF POWER PLUG.
■ MEASURED IN "AM" POSITION.

◎ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter.
2. AC voltages measured at 1000 ohms per volt.
3. Socket connections are shown as bottom view.
4. Measured values are from socket pin to common negative.
5. Line voltage maintained at 117 volts for voltage readings.
6. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
7. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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344-9

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
"Treble" to sharp position.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455KC (400∿ Mod)	AM	1000KC	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	10MMF	High side to AM antenna lug on tuning gang. Low side to chassis.	1400KC	"	1400KC	"	A5, A6, A7	"
3.	"	"	600KC	"	600KC	"	A8, A9	Adjust for maximum output. Repeat steps 2 and 3.

10KC FILTER ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4.	Direct	High side to pin 7 of V3. Low side to chassis.	455KC (10KC Mod)	AM		Across voice coil.	A10	Adjust for MINIMUM output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 5 (plate) of 6BZ6 (V1). Low side to chassis.	10.7MC (unmod)	FM	Low frequency end of dial.	DC probe thru 1Meg to point (A). Common to chassis.	A11, A12, A13, A14, A15	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe thru 1Meg to point (B). Common to chassis.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 5 and 6.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 300KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD & 1000Ω in series	High side to pin 5 (plate) of 6BZ6 (V1). Low side to chassis.	10.7MC (300KC Swp)	FM	Low frequency end of dial.	Vert. amp. thru 1Meg to point (A). Low side to chassis.	A11, A12, A13, A14, A15	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
6.	"	"	"	"	"	Vert. amp. thru 1Meg to point (B). Low side to chassis.	A16	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of cross-over lines similar to Fig. 2. SLIGHTLY retouch A15 for maximum amplitude and straightness of crossover lines. Repeat steps 5 and 6.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	120Ω & 150Ω carbon resistors	High side thru 120Ω to FM antenna terminal. Low side thru 150Ω to chassis.	107MC	FM	107MC	DC probe thru 1Meg to point (A). Common to chassis.	A17, A18, A19	Adjust for maximum deflection.
8.	"	"	89MC	"	89MC	"	A20	Adjust for maximum deflection. Repeat steps 7 and 8.

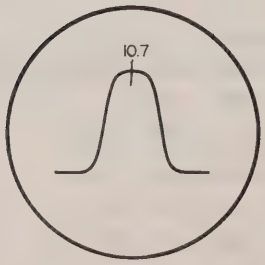


FIG. 1

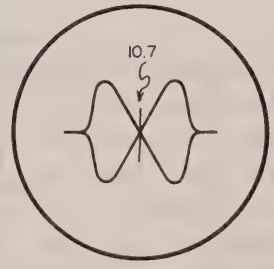


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BZ6	
V2	FM Mixer-Osc.	6U8	
V3	AM Converter	6BE6	
V4	1st IF Amplifier	6BA6	

ITEM No.	USE	TYPE	NOTES
V5	2nd FM IF Amplifier	6BA6	
V6	Ratio Detector	6AL5	
V7	AF Amp. -Cathode Follower	12AX7	
V8	Tuning Indicator	6E5	

ELECTROLYTIC CAPACITORS

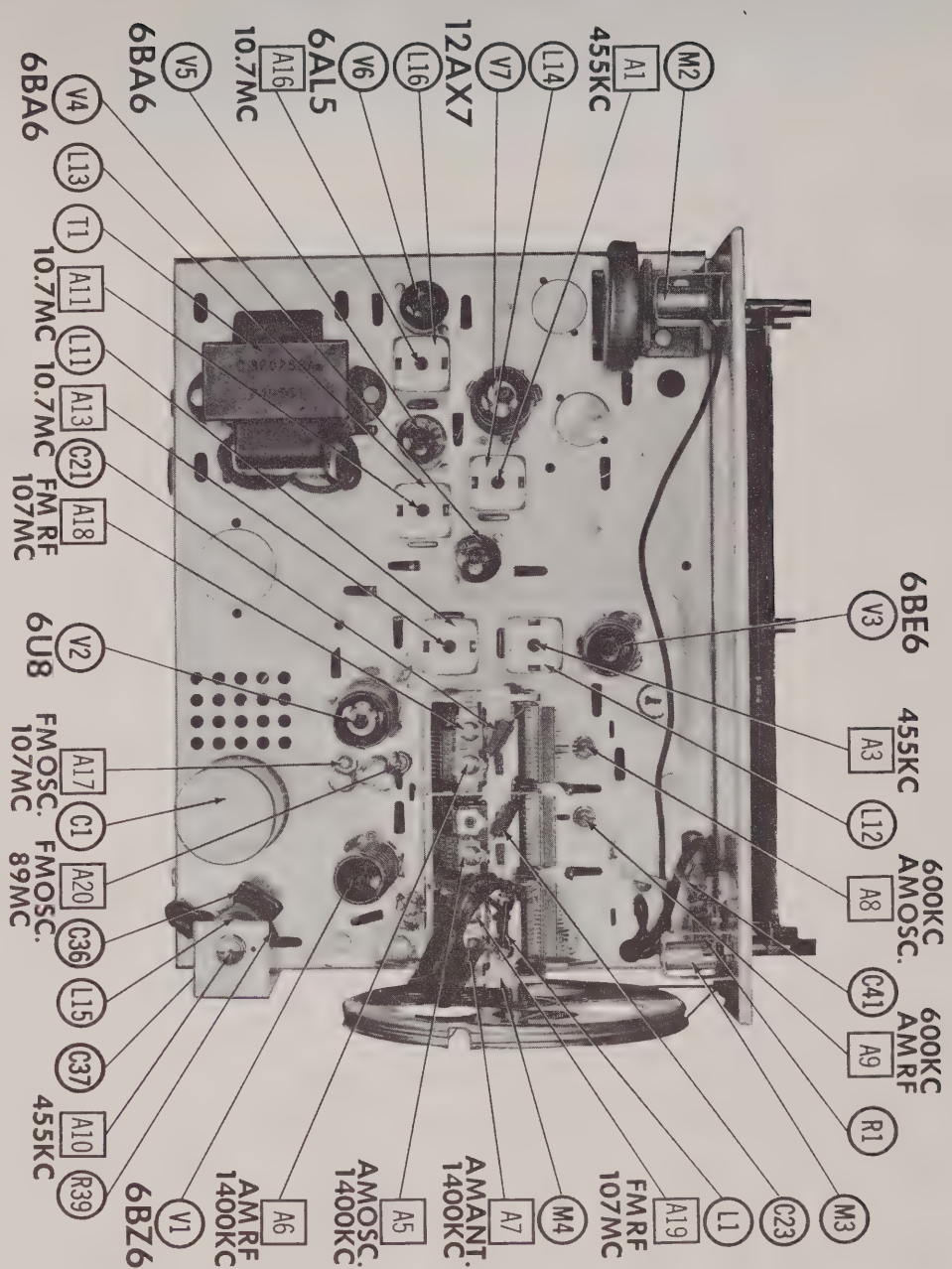
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲30	450	270021-58	AFH2-54	BO430	FP237	TDM-52	D-225	TVL-2759
B	▲30	450							
C2	4	50	270027-27	PRS150V4	BR550	TC30	TD-4-50	MMT-0505	TVA-1303
C3	20	25	270027-2	PRS25V25	BR202	TC26	TD-25-25	FM-0225	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	220	500	250187-57	SI 220	D6-221	TP39	GP-220	UC-5322	5GA-T22	
C5	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C6	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C7	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C8	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C9	100	500	250187-53	SI 100	D6-101	5W5T1	GP-100	MCB235	1FM-31	
C10	33	500	250187-47	NP0-SI 33	TCZ-33	22R5Q33	TCO-33	ZT-5433	5TCC-Q33	
C11	2.2		250221-118	NP0-SI2.2	TCZ-2R2	TZ05	TCO-2.2		5TCCB-V22	
C12	5		250088-138							
C13	2.5-12.5		250188-9							
C14	220	500	250159-55	1469-00022	TCZ-220	22R5T22	TCO-220		MS-322	
C15	220	500	250159-55	1469-00022	TCZ-220	22R5T22	TCO-220		MS-322	
C16	.0047	400	250211-5	BPD-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C17	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C18	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C19	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C20	.1	200	250202-13	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C21	20	500	250187-5	1469-00002	TCZ-20	22R5Q2	TCO-20	ZT-542	MS-42	
C22	47	500	250187-49	1469-000047	TCZ-47	22R5Q47	TCO-47	ZT-5447	MS-447	
C23	20	500	250187-5	1469-00002	TCZ-20	22R5Q2	TCO-20	ZT-542	MS-42	
C24	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C25	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C26	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C27	3300		250175-28	BPD-0033	D6-332	K077	ED-0033	UC-5233	5HK-D33	
C28	10000		250218-19	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C29	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C30	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C31	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C32	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C33	330		250207-49	SI 330	D6-331	TP43	GP-330	UC-5333	5GA-T33	
C34	330		250207-49	SI 330	D6-331	TP43	GP-330	UC-5333	5GA-T33	
C35	5000		250175-30	DI-005	DD-502	K080	GP-5000	UC-525	5GA-D5	
C36	1000	500	250228-354	1464-001		1R5D1		MCE255	MS-21	
C37	1000	500	250228-354	1464-001		1R5D1		MCE255	MS-21	
C38	470		250218-6	DI-00047	DD-471	G060	ED-470	UC-5347	5GA-T47	
C39	47		250218-17	N750-DI47	TCN-47	N033	TC7-47	NT-5447	5TCU-Q47	
C40	2000		250218-20	BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C41	47		250218-17	N750-DI47	TCN-47	N033	TC7-47	NT-5447	5TCU-Q47	
C42	220		250218-5	DI-00022	DD-221	G051	ED-220	UC-5322	5GA-T22	
C43	10000		250218-19	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C44	470		250218-6	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C45	2000		250218-16	BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C46	10000		250218-19	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C47	10000		250218-19	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C48	10000		250218-19	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C49	.1	200	250202-13	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	220072-25	B-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2	1Meg	½	220072-26	B-68		Q17-137	U52	Treble
R3A	1Meg	½	220073-20	AB-70	A47-1Meg-Z	Q13-137	U53	Bass
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R3A
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R3A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MAGNAVOX PART No.	IRC PART No.	
R4	15K		230104-76	BTS-15K	
R5	180Ω		230104-53	BTS-180	
R6	100K		230104-86	BTS-100K	
R7	4700Ω		230104-70	BTS-4700	
R8	100K		230104-86	BTS-100K	
R9	68K		230104-84	BTS-68K	
R10	1000Ω		230104-62	BTS-1000	
R11	2700Ω		230104-67	BTS-2700	
R12	1000Ω	1	230105-62	BTA-1000	
R13	1Meg		230104-98	BTS-1Meg	
R14	100Ω		230104-50	BTS-100	
R15	22K		230104-78	BTS-22K	
R16	15K	2	230106-76	BTB-15K	
R17	1000Ω		230104-62	BTS-1000	
R18	1000Ω	2	230096-62	BTB-1000	
R19	2.2Meg		230104-102	BTS-2.2Meg	
R20	8200Ω	5	240071-13	PW7-8200	
R21	68Ω		230104-48	BTS-68	
R22	47K		230104-82	BTS-47K	
R23	22K		230104-78	BTS-22K	
R24	1000Ω		230104-62	BTS-1000	
R25	68Ω		230104-48	BTS-68	
R26	120Ω		230104-51	BTS-120	
R27	68K		230104-84	BTS-68K	
R28	1000Ω		230104-62	BTS-1000	
R29	15K		230104-76	BTS-15K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MAGNAVOX PART No.	IRC PART No.	
R30	1800Ω		230104-65	BTS-1800	
R31	15K		230104-76	BTS-15K	
R32	6.8Meg		230104-108	BTS-6.8Meg	
R33	2.2Meg		230104-102	BTS-2.2Meg	
R34	1.5Meg		230104-100	BTS-1.5Meg	
R35	220K		230104-90	BTS-220K	
R36	47K		230104-82	BTS-47K	
R37	150K			BTS-150K	Note 1
R38	47K		230104-82	BTS-47K	
R39	220K		230104-90	BTS-220K	
R40	1Meg		230104-98	BTS-1Meg	
R41	1.5Meg		230104-100	BTS-1.5Meg	
R42	1Meg		230104-98	BTS-1Meg	
R43	47K		230104-82	BTS-47K	
R44	330K		230104-92	BTS-330K	
R45	330K		230104-92	BTS-330K	
R46	47K		230104-82	BTS-47K	
R47	100K		230104-86	BTS-100K	
R48	3300Ω		230104-68	BTS-3300	
R49	470K		230104-94	BTS-470K	
R50	100K		230104-86	BTS-100K	
R51	220K		230104-90	BTS-220K	
R52	2200Ω		230104-66	BTS-2200	
R53	470K		230104-94	BTS-470K	
R54	1250Ω	10	240021-45	PW10-1250	

Note 1: Not used in some versions.

TRANSFORMER (FILAMENT)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ② .17A	6.3VAC ② 2.6A			320258-1	F5512				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MAGNAVOX PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Trans.	.1ΩCT	0Ω	360491-2				
L2	FM Ant. Coil	0Ω		360629-1				
L3	RF Choke	.1Ω		360522-9	19-1002		4606	2 Microhenries
L4	FM RF Coil	0Ω		360629-1				
L5	Fil. Choke	.1Ω		360522-9	19-1002		4606	2 Microhenries
L6	Fil. Choke	.1Ω		360522-9	19-1002		4606	2 Microhenries
L7	FM Osc. Coil	0Ω		360628-1				Tapped
L8	AM Loop Stick	.4Ω		460894-1				
L9	AM RF Coil	19Ω	3Ω	360348-2			A-5495-RF	
L10	AM Osc. Coil	4.6Ω		360407-2	14-1033			Tapped ② .4Ω
L11	1st FM IF	.6Ω	.6Ω	360626-1	16-3487	FM-254	1463	
L12	1st AM IF	16Ω	16Ω	360611-1	16-6758	BC-352	12-C1	
L13	2nd FM IF	.6Ω	.6Ω	360626-1	16-3487	FM-254	1463	
L14	2nd AM IF	27Ω	27Ω	360625-1	16-6770	BC-355	12-C6	
L15	10KC Filter	450Ω		360621-1				
L16	Ratio Det.	3.9Ω	1.4ΩCT	360627-1	17-3498	FM-255	1465	Tertiary winding = .4Ω

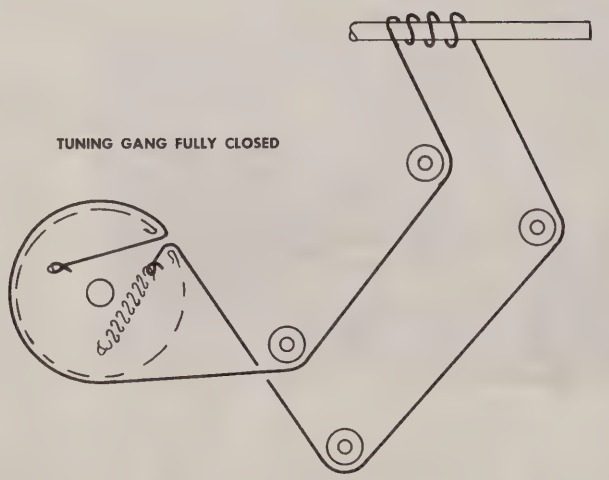
PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		MAGNAVOX PART No.	SYLVANIA PART No.	
M1	1N34A	530030-2	1N34A	AM Audio Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M2	Dial Light	180161-6	#44
M3	Dial Light	180161-6	#44
M4	Tuning Cap.	260133-1	6 Gang (AM Sections: 19-535MMF, 19-535MMF, 15-185MMF)
M5	Switch	160255-1	Selector (Rotary, Wafer Type)
	Dial Glass	150423-1	Chassis CR-718
	Dial Glass	150419-1	Chassis CR-721AA
	Dial Pointer	102448-2	



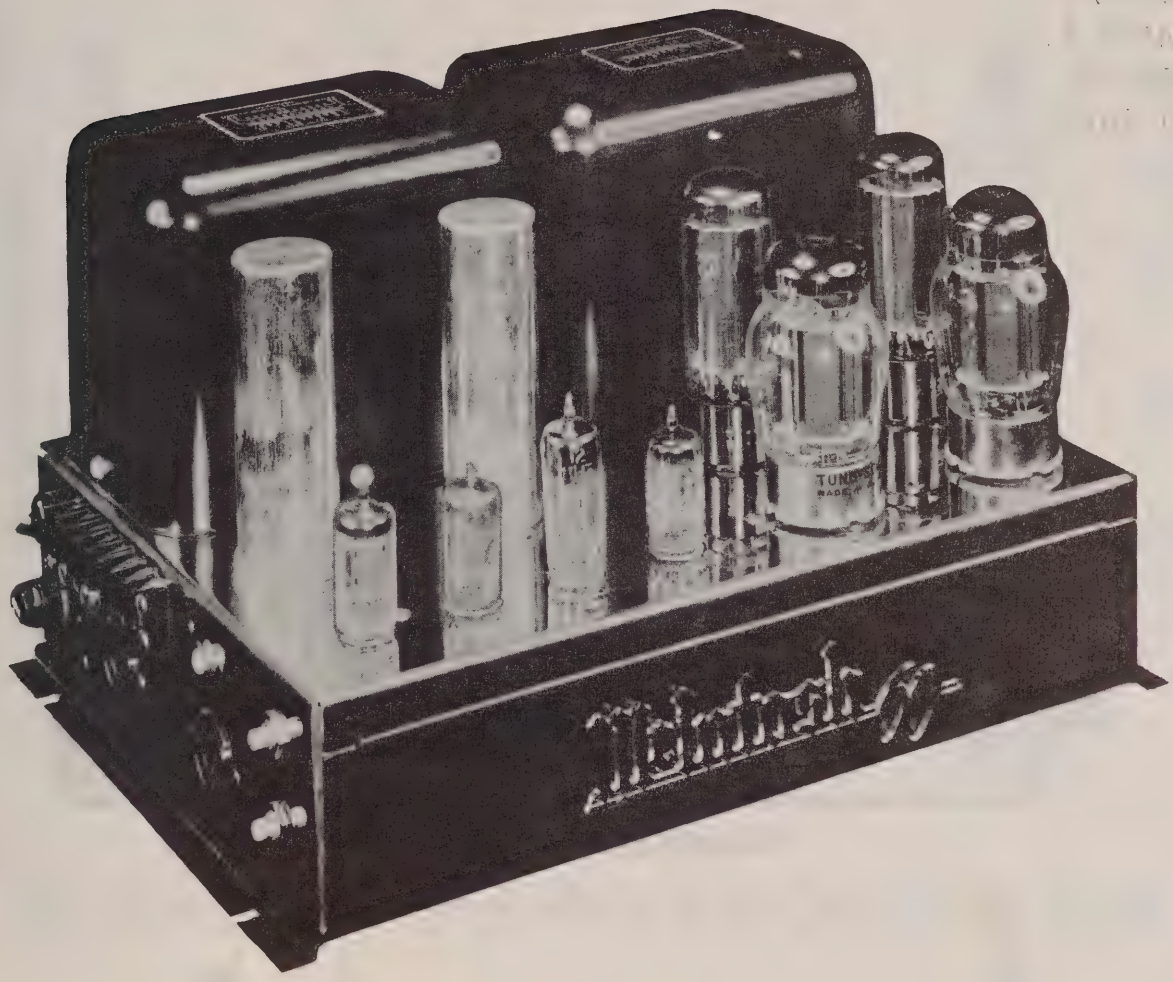
DIAL CORD STRINGING

RETMA MEMBER

MC INTOSH MODEL MC-60

PROPERTY OF
TOWNSHIP
ST.
COLORADO

MC INTOSH
MODEL MC-60



MC INTOSH
MODEL MC-60

TRADE NAME	Mc Intosh Model MC-60
MANUFACTURER	Mc Intosh Laboratory, Inc., 320 Water St., Binghamton, N.Y.
TYPE SET	AC Operated 60 Watt Audio Amplifier
TUBES (Eight)	Types 12AX7 AF Amp.-Volt. Reg., 12AU7 AF Amp.-Phase Inv., 12BH7 AF Amp., 12AX7 Driver, (2) 6550 Output, (2) 5U4GA Rectifier
POWER SUPPLY	110-130 Volts AC-50/60 Cycles RATING 1.2 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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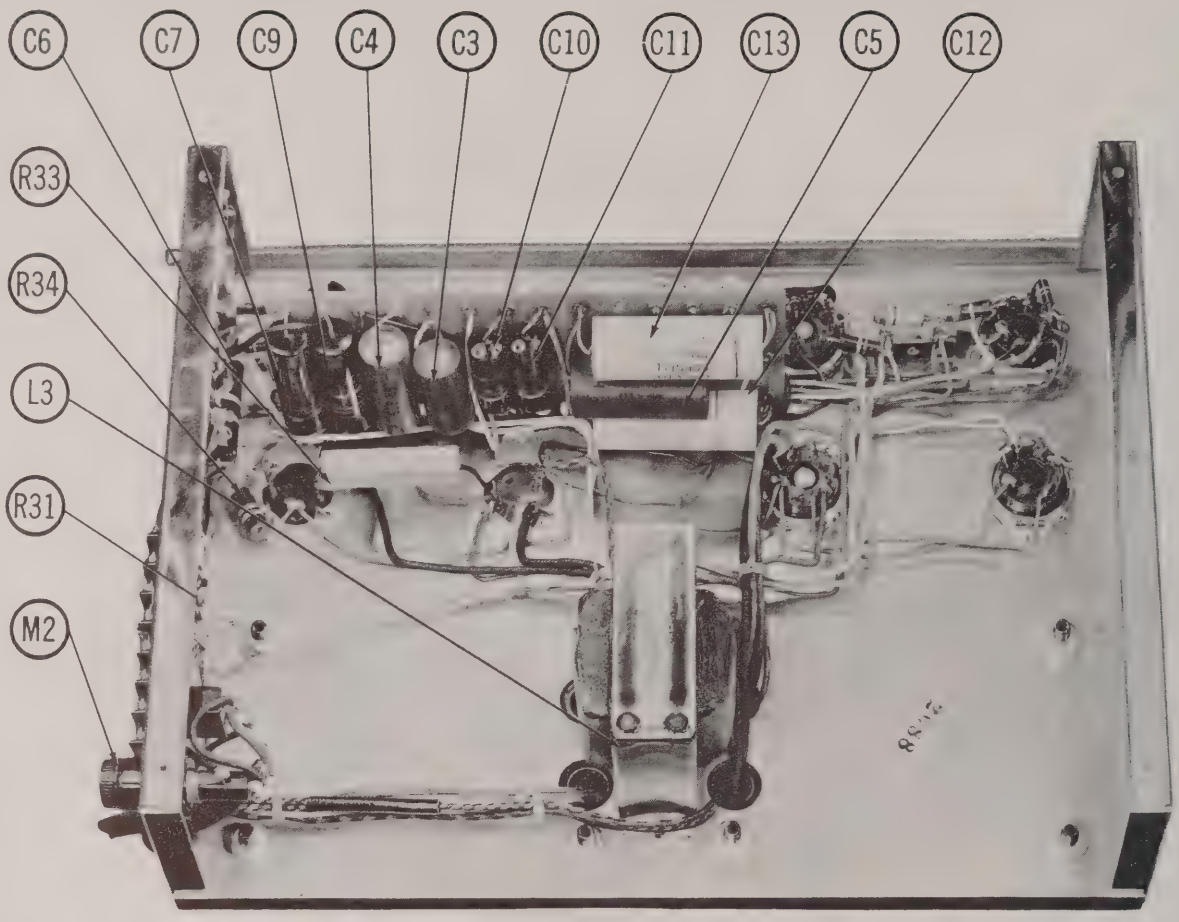
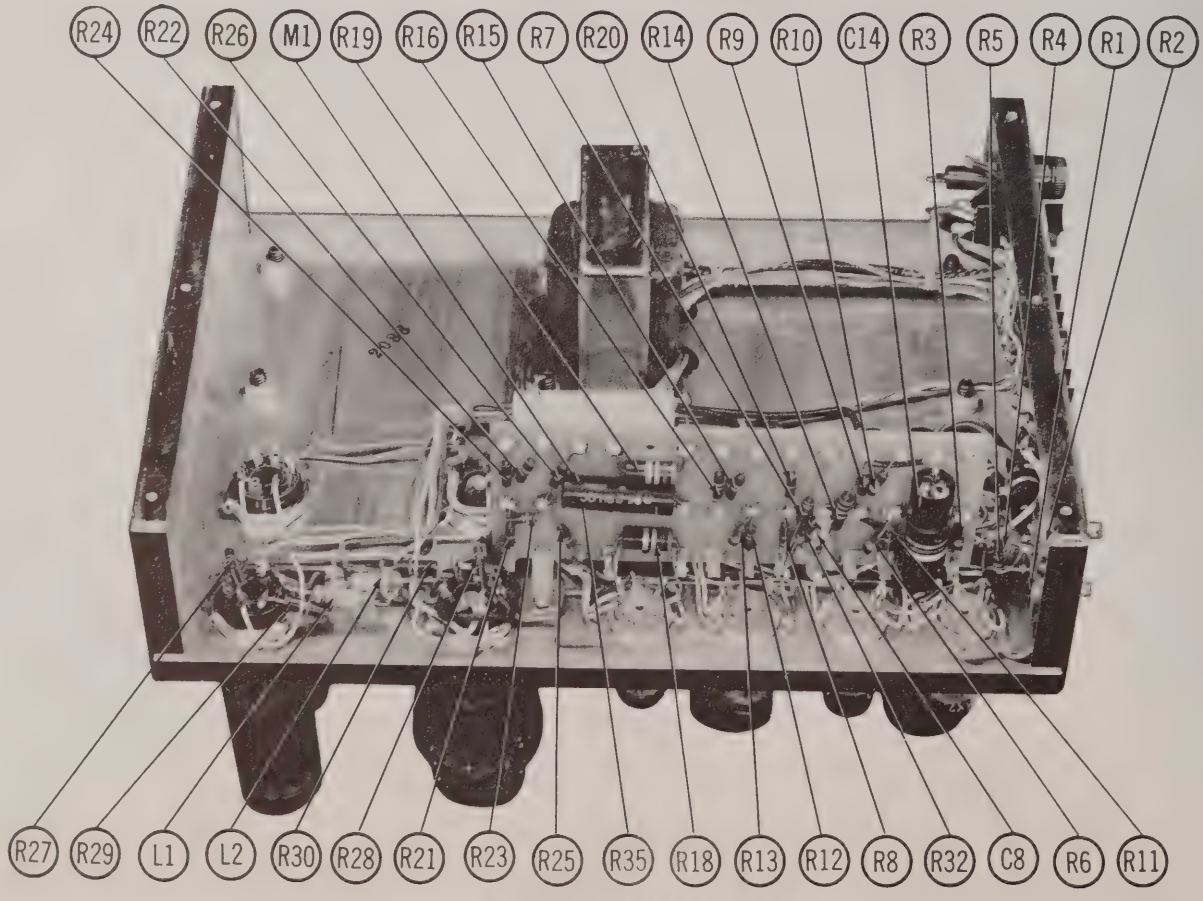


CHASSIS-BOTTOM VIEW



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. -Voltage Reg.	12AX7	
V2	AF Amp. -Phase Inv.	12AU7	
V3	AF Amplifier	12BH7	
V4	Driver	12AX7	

ITEM No.	USE	TYPE	NOTES
V5	Output	6550	
V6	Output	6550	
V7	Rectifier	5U4GA	
V8	Rectifier	5U4GA	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MC INTOSH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	500						T-160	R2309 *
B	■80	450						D-270	
C	▲20	450							
C2A	▲40	500						T-160	R2309 *
B	■80	450						D-270	
C	▲20	450							
C3	100	12	(Note 1)	PRS12V100	BBR100-12	TC250	TD-100-15	MTH-1210	TVA-1130
C4	8	250	(Note 2)	PRS250V8	BR825	TC51	TD-8-250	FM-2508	TVA-1503
C5	10	450		PRS450V10	BR1045	TC72	TD-10-450	FM-4510	TVA-1705

Note 1. Chassis with serial numbers 500-1703 inclusive use 20MFD in this application.
Note 2. Chassis with serial numbers 500-1703 inclusive use . 22MFD in this application.
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

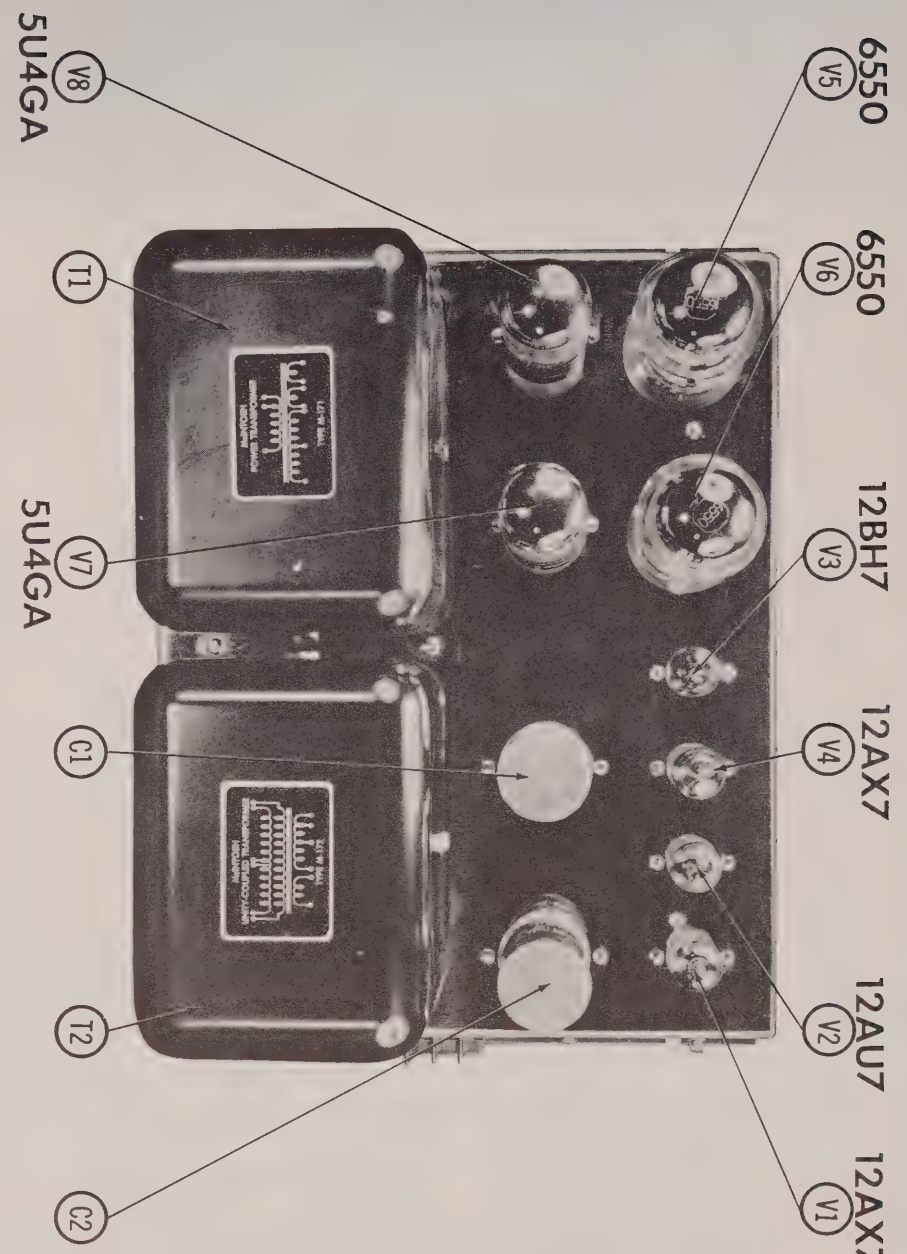
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MC INTOSH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C7	.47	200		P288N-47		CUB2P47		PT4047	2TM-P47	
C8	470			1464-00047	D6-471	5R5T47	811-471		MS-347	
C9	.22	400		P488N-22		CUB4P22		PT4022	4TM-P22	
C10	.047	600		BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C11	.047	600		BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C12	.25	600		P688N-25		CUB6P25		PT6025	6TM-P25	
C13	.25	600		P688N-25		CUB6P25		PT6025	6TM-P25	
C14	.47	200		P288N-47		CUB2P47		PT4047	2TM-P47	Note 1

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MC INTOSH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	50K	½	BY9859	BX-59	A47-500K-S	Q11-133	U50	Gain
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R1A
R2A	250Ω	½	BB2859	AB-2		Q11-201		Hum
B	Shaft		Not Req.	AK-1		Not Req.		Attach to R2A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MC INTOSH PART No.	IRC PART No.	
R3	100K			BTS-100K	
R4	27K			BTS-27K	
R5	3.3Meg			BTS-3.3Meg	
R6	100K			BTS-100K	
R7	3300Ω			BTS-3300	
R8	68Ω 5%			BTS-68 5%	
R9	270K 5%			BTS-270K 5%	Note 1
R10	540K 5%			BTS-560K 5%	Note 2
R11	2.2Meg			BTS-2.2Meg	
R12	27K 5%			BTS-27K 5%	
R13	30K 5%			BTS-30K 5%	
R14	18K	1		BTA-18K	
R15	220K			BTS-220K	
R16	220K			BTS-220K	
R17	330K			BTS-330K	Note 1
R18	12K	2		BTB-12K	Note 3
R19	12K	2		BTB-12K	Note 3
R20	1200Ω			BTS-1200	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MC INTOSH PART No.	IRC PART No.	
R21	1Meg			BTS-1Meg	
R22	120K 5%			BTS-120K 5%	
R23	820K 5%			BTS-820K 5%	
R24	1Meg			BTS-1Meg	
R25	220K			BTS-220K	
R26	220K			BTS-220K	
R27	220K			BTS-220K	Note 4
R28	220K			BTS-220K	Note 4
R29	220Ω	1		BTA-220	Note 4
R30	220Ω	1		BTA-220	Note 4
R31	180K			BTS-180K	Note 4
R32	1300Ω 5%			BTS-1300 5%	
R33	10K	10		PW10-10K	
R34	10K	2		BTB-10K	
R35	1800Ω			BTS-1800	
R36	100Ω			BTS-100	Note 1
R37	40Ω	10		1 3/4A-40	Note 5

Note 1. Not used in some versions.
Note 2. In models with serial numbers from 500 to 1703 a 1.2Meg is used in this application.
Note 3. R18 and R19 are matched to within 1%.
Note 4. Not used in models with serial numbers from 500 to 1703.
Note 5. Use only in models with serial numbers from 500 to 1703.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MC INTOSH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	125VAC tap @ 117VAC @1.2A	680VCT @.116A	5VAC @ 6A	6.3VAC @4.8A	M-171				26R25U ①	

① Tape 6.3V @.06A winding. Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MC INTOSH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	610Ω	16Ω tap @ 8Ω,4Ω	M-172						

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MC INTOSH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	RF Choke	2Ω						2.7 Microhenries, IRC part #CLA
L2	RF Choke	.8Ω			19-1001		4604	1.5 Microhenries, IRC part #CLA

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MC INTOSH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L3	.116A	37.5Ω	1.84 HY	M-174	C5037 ①	C-2974 ①	C-2325 ①	26C43 ①	C-17X①

① Drill one new mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	MC INTOSH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.003A	02628HQC		V20HP		HXL30	026-28H-QC	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MC INTOSH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG S/B	3 2/10A			31303.2 (3AG S/B 3 2/10A)	342001	MDL3 2/10	HKP

MISCELLANEOUS

ITEM No.	PART NAME	MC INTOSH PART No.	NOTES
M3	Neon Bulb		#NE2 (Voltage Regulator) Not used in some versions.
M4	Neon Bulb		#NE2 (Voltage Regulator) Not used in some versions.

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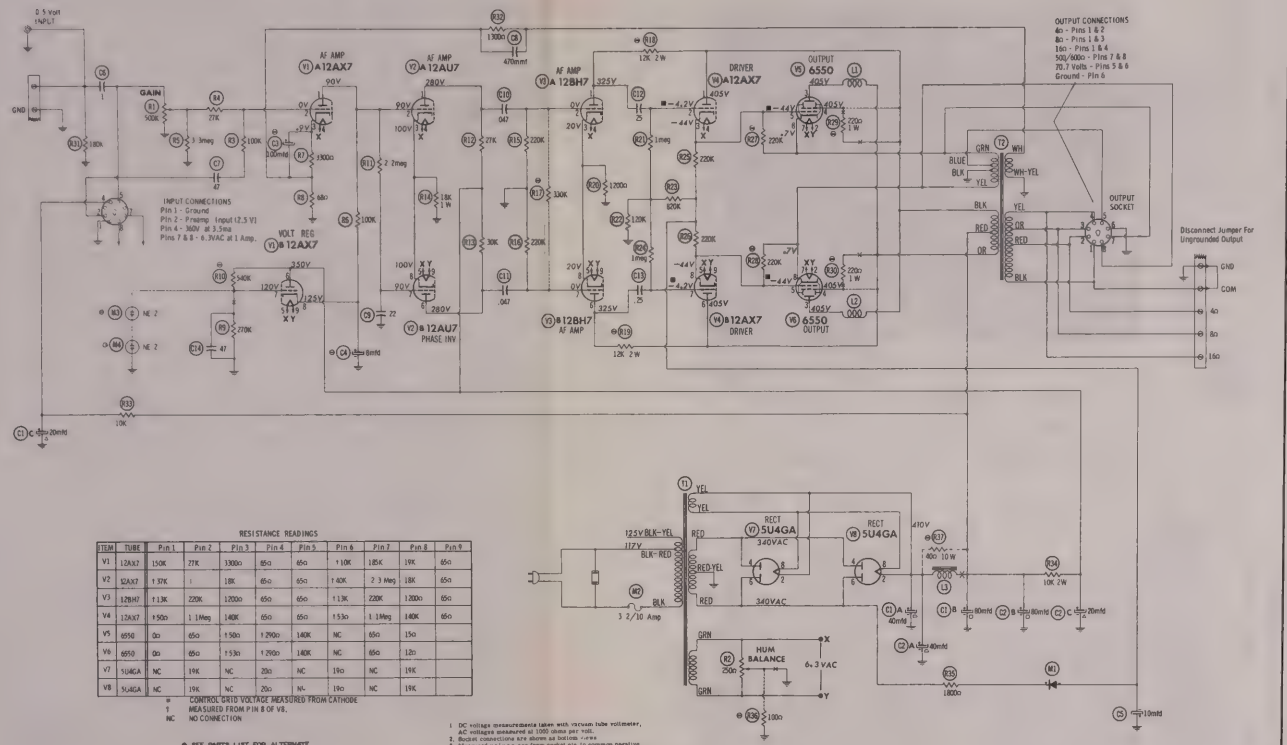

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	150K	27K	330Ω	65Ω	65Ω	↑10K	185K	19K	65Ω
V2	12AX7	↑.37K	↑	1.8K	65Ω	65Ω	↑40K	2.3 Meg	18K	65Ω
V3	12BH7	↑1.3K	220K	1200Ω	65Ω	65Ω	↑1.3K	220K	1200Ω	65Ω
V4	12AX7	↑50Ω	1.1Meg	140K	65Ω	65Ω	↑53Ω	1.1Meg	140K	65Ω
V5	6550	0Ω	65Ω	↑50Ω	↑290Ω	140K	NC	65Ω	15Ω	
V6	6550	0Ω	65Ω	↑53Ω	↑290Ω	140K	NC	65Ω	12Ω	
V7	5U4GA	NC	19K	NC	20Ω	NC	19Ω	NC	19K	
V8	5U4GA	NC	19K	NC	20Ω	NC	19Ω	NC	19K	

* CONTROL GRID VOLTAGE MEASURED FROM CATHODE
↑ MEASURED FROM PIN 8 OF V8.
NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom view.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Normal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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L. F. MANKENSHIP
DENVER, COLORADO

RCA VICTOR MODELS
7-BX-6, 7-BX-7 (Ch. RC-1161, A)

RCA VICTOR MODELS
7-BX-6, 7-BX-7 (Ch. RC-1161, A)

TRADE NAME	RCA Victor Models 7-BX-6E, -6J, -6L, 7-BX-7J, -7L (Ch. RC-1161, RC-1161A)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp., of America, Camden 8, N. J.
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det-AVC-AF Amp., 3V4 Output
POWER SUPPLY	110-120 Volts AC-DC (or) 7.5Volts "A" Supply & 90Volts "B" Supply
RATING	.15 Amp. @ 117 Volts AC (or) 50MA @ 7.5Volts DC & 11MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540KC - 1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 6 (grid) of 1U4 (V2). Low side to chassis.	455KC (400∿ Mod)	Point of non-interference.	Across voice coil.	A1, A2	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	High side to antenna lug on tuning gang. Low side to chassis.	"	"	"	A3, A4	"
	Perform the following steps with chassis cover in place and chassis installed in cabinet. Connect antenna (slots provided in cabinet).						
3.		Loop	1620KC	Tuning gang fully open.	Across voice coil.	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	Tune to 1400KC signal.	"	A6	"
5.		"	600KC	Tune to 600KC signal.	"	A7	Adjust for maximum output while rocking tuning gang.

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PARTS LIST AND DESCRIPTIONS

RCA VICTOR
MODEL 7-BX-6E

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det-AVC-AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	101891	PR4-220		WQ215			R1378*
B	20	150							
C	20	150							
D	100	25							

* Non catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.033	400	73552	BPD-03	DF-303	CUB6S33		GEM-4133	6TM-S33	
C3	56		75784	NP0-S156	TCZ-56	TZ24	TCO-56		5TCC-Q55	
C4	10000		73960	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C5	.0033	200	77447	BPD-0033	D6-332	CUB6D33	GP-3300	GEM-6233	6TM-D33	
C6	3		101233	NP0-S13	TCZ-3R3	Z007	TCO-3	ZT-553	5TCCB-V33	
C7	.0047	400	79017	BPD-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C8	.0022	200	77446	DI-0022	D6-222	CUB6D22	GP-2200	GEM-6222	6TM-D22	
C9	.22	200	79740	P288N-22		CUB2P22		GEM-2022	2TM-P22	
C10	10000		79918	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C11	.1	400	77423	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	101890	B-70-S	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch			Not Req.	SWE-20	76-2	US-27	Attach to R1A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

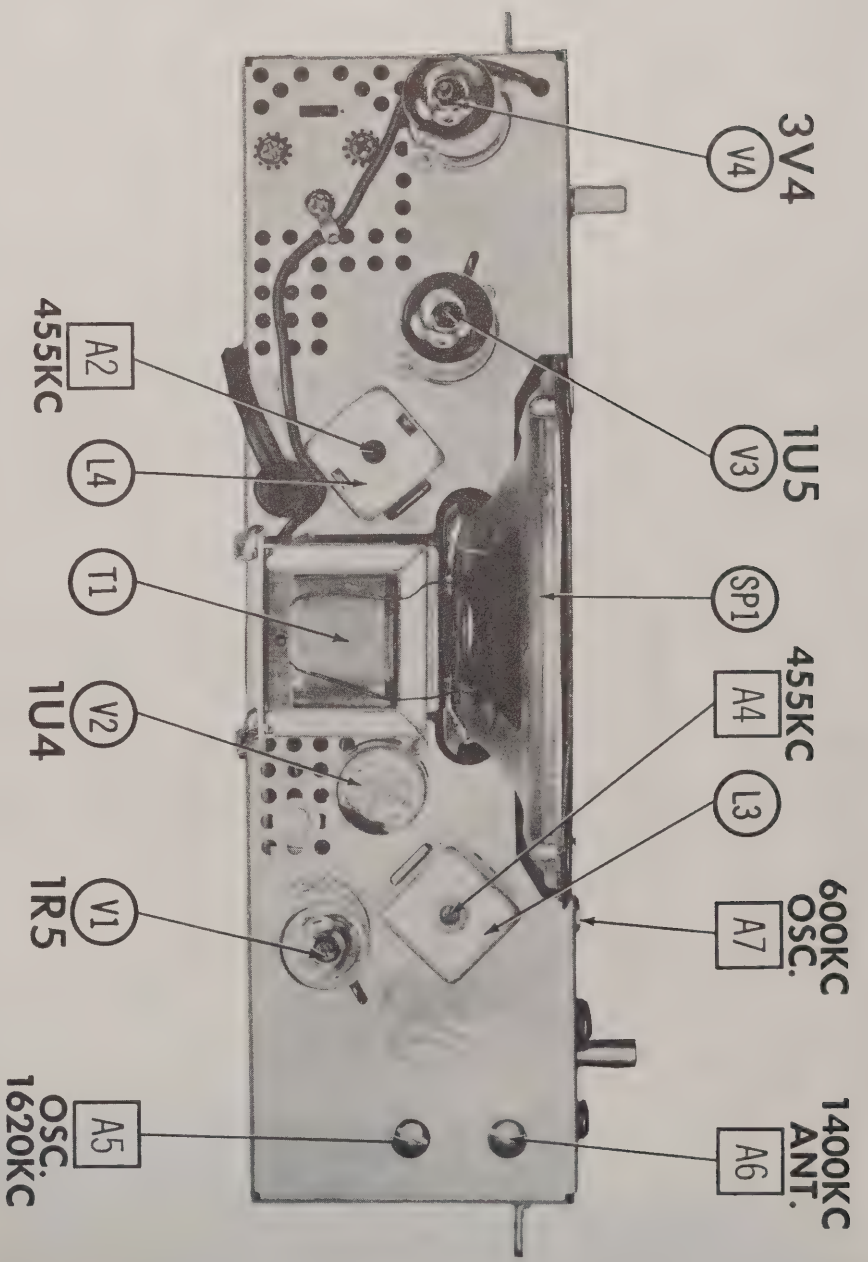
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R2	100K		502410	BTS-100K	
R3	15K		502315	BTS-15K	
R4	4.7Meg		30931	BTS-4.7Meg	
R5	4.7Meg		30931	BTS-4.7Meg	
R6	56K		502356	BTS-56K	
R7	10Meg		502610	BTS-10Meg	
R8	2200Ω		502222	BTS-2200	
R9	820Ω		502182	BTS-820	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R10	1000Ω		502210	BTS-1000	
R11	470Ω		502147	BTS-470	
R12	1200Ω 5%	4	101881	PW4-1250	
R13	1200Ω 5%	4	101881	PW4-1250	
R14	3300Ω		502233	BTS-3300	
R15	47Ω	1	512047	BTA-47	
R16	22Ω		502022	BTS-22	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	8600Ω	3-4Ω	101880		A-2998	A-3329	26S49	S-8X ①	① Bend mtg. feet down.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	RCA TYPE No.	
SP1	4"	PM	3-4Ω	77959	4A1	304S2	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	.7Ω		101884				Model 7-BX-6E (Note 1)
L2	Osc. Coil	1Ω	8.7Ω	101605	14-1060		71-Osc.	
L3	Input IF	28Ω	28Ω	100075	16-6758	BC-352	12-C1	
L4	Output IF	25Ω	25Ω	100076	16-6770	BC-355	12-C6	

Note 1: Part #101883 used in models 7-BX-6J or 7-BX-7J. Part #101886 used in models 7-BX-6L or 7-BX-7L.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA	
K1	Audio Couplate	1Meg, 2.2Meg, 4.7Meg, 100MMF, 2000MMF, 5000MMF.	100081	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-116-3 PC-92 114TM3 1407-02 P-3

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	RCA Victor PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.057A	77292	1386	RS065Q	6S65	8J1	65	

BATTERIES

ITEM No.	VOLTAGE	RCA Victor PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	7½V "A"	VS065	717			C5			
M3	90V "B"	VS219		479			P60		

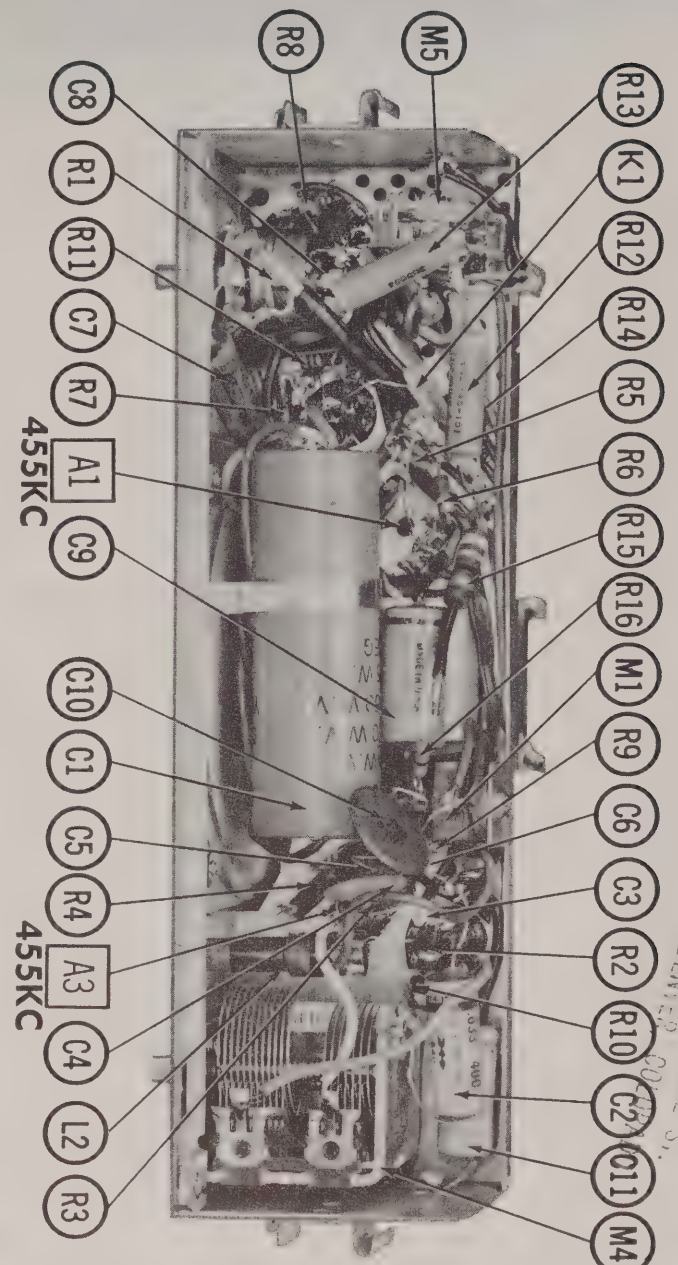
MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M4	Tuning Cap.	10901	2 Gang (17-330MMF, 11-90MMF) Chassis RC-1161.
	Tuning Cap.	10902	Used in chassis RC-1161A.
M5	Switch	101882	Line-Battery (Rotary, Wafer Type)
	Case-Back	Y2914	Model 7-BX-6E.
	Case-Front	Y2909	Model 7-BX-6E.
	Case-Back	Y2913	Models 7-BX-6J & 7-BX-7J.
	Case-Front	Y2910	Model 7-BX-6J.
	Case-Front	Y2908	Model 7-BX-7J.
	Case-Back	Y2916	Models 7-BX-6L & 7-BX-7L.
	Case-Front	Y2912	Model 7-BX-6L.
	Case-Front	Y2911	Model 7-BX-7L.
	Handle	101893	Model 7-BX-6E.
	Handle	101892	Models 7-BX-6J & 7-BX-7J.
	Handle	101895	Models 7-BX-6L & 7-BX-7L.
	Knob	101899	Tuning, Models 7-BX-6E, J, L.
	Knob	101897	Tuning, Models 7-BX-7J, L.
	Knob	101900	Volume, Models 7-BX-6E, J, L.
	Knob	101898	Volume, Models 7-BX-7J, L.
	Pointer	101887	Models 7-BX-7J, L.

SET 344 FOLDER 11

RCA VICTOR MODEL 7-BX-6E

CHASSIS—BOTTOM VIEW



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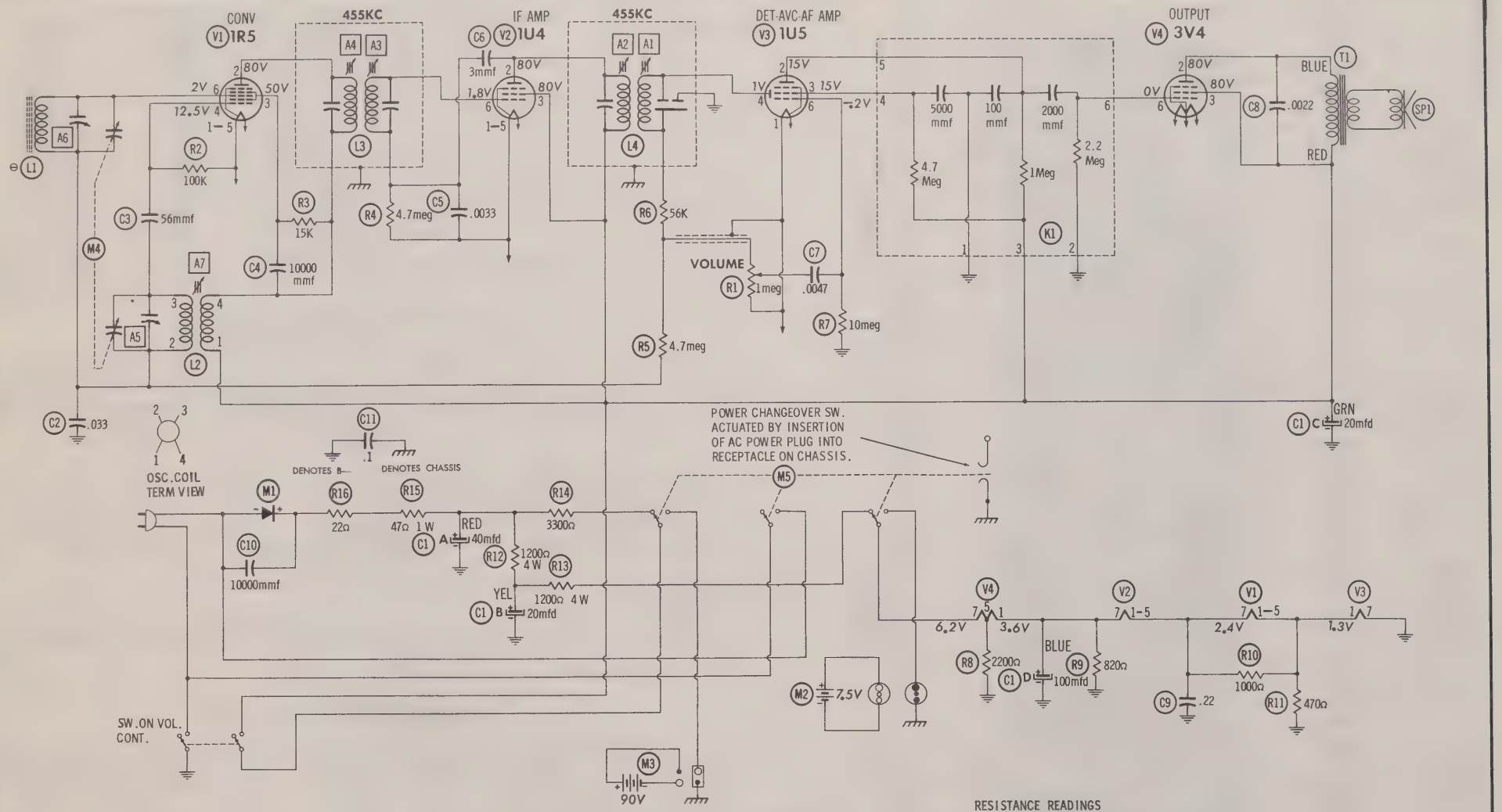
RCA VICTOR MODEL 7-BX-6E



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	•	†3300Ω	†18K	100K	•	5.7Meg	•
V2	1U4	•	†3300Ω	†3300Ω	TP	•	4.7Meg	•
V3	1U5	•	†1Meg	†4.7Meg	1 Meg	•	10Meg	•
V4	3V4	•	†4000Ω	†3300Ω	NC	•	2.2Meg	•

• DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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RCA VICTOR MODEL
7-HFP-1 (Ch. RS-150C)

RCA VICTOR MODEL
7-HFP-1 (Ch. RS-150C)

TRADE NAME	RCA Victor Model 7-HFP-1 (Ch. RS-150C)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12AX7 AF Amp. -Phase Inv. (2) 50C5 Output
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .32 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE RCA RP198 - PHOTOFACT SET 273 - FOLDER 9 OR RECORD CHANGER MANUAL CM-7.

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PARTS LIST AND DESCRIPTIONS

RCA VICTOR
MODEL 7-HFP-1

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. -Phase Inv.	12AX7	
V2	Output	50C5	
V3	Output	50C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	75980	PRS150V4080	BBRD8415	TCD498	TDLD-12	FMT-1540	TVA-3455
B	50	150							
C2	5	50	74521	SRE50V5	BR550	TC30	TD-5-50	MMT-0505	TVA-1303
C3	8	10VAC	100509	PRS10VAC8	BBR20-25 * BBR20-25	TC44 * TC44		MMT-0220* MMT-0220*	R2201†

* Connect negative leads together.
† Non catalog item.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1.5Meg	½	71596	ABT-167			UDT-291	Volume Tap② 250K & 500K
B	Shaft		Not Req.	AK-3			Not Req.	Attach to R1A
R2A	2Meg	½	100458	AB-76	A47-2Meg-Z	Q13-139	U55	Low Frequency Tone
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	2Meg	½	100458	AB-76	A47-2Meg-Z	Q13-139	U55	High Frequency Tone
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R3A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

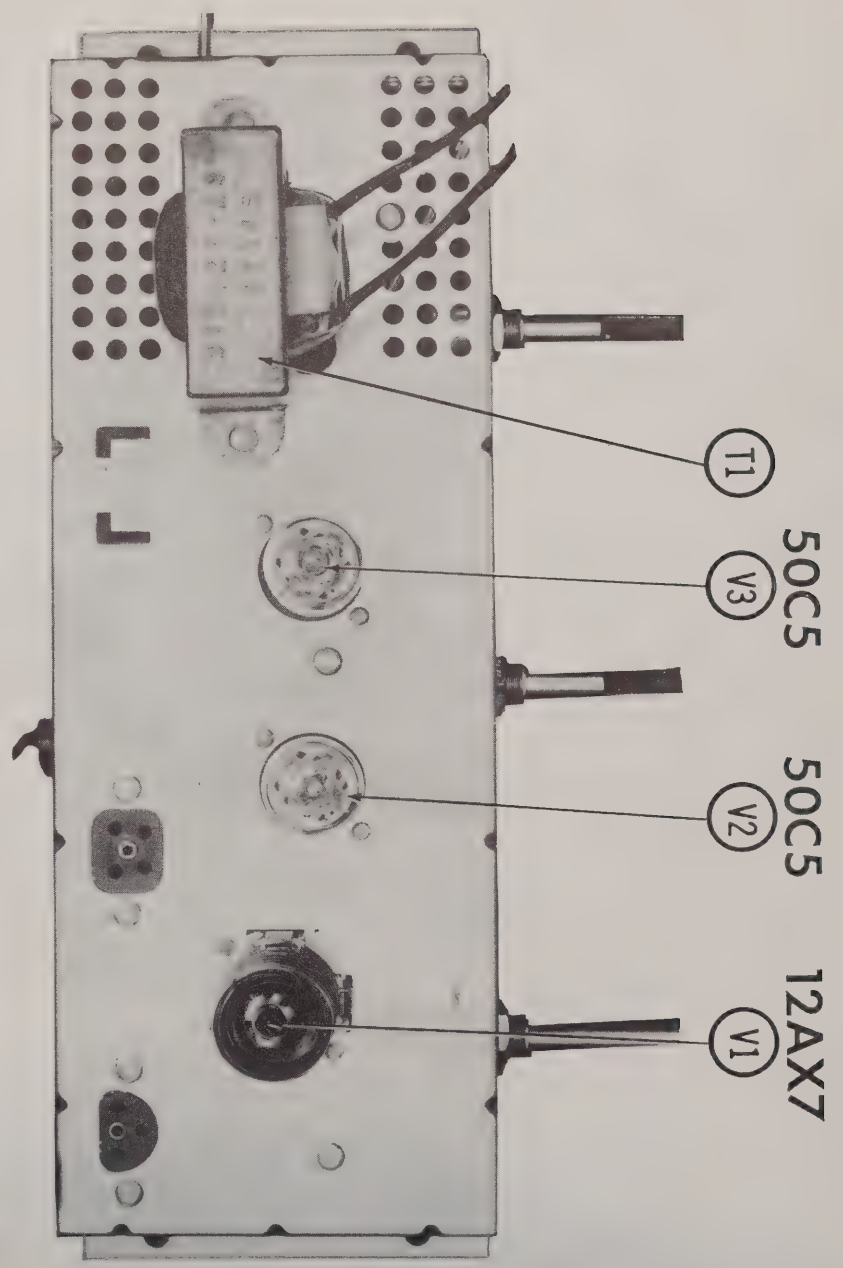
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	.047	400	73553	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C5	1000	500	101700	DI-001	DD-102	K069	811-102	DC521	5GA-D1	
C6	.01	200	73561	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C7	.0039	400	73796	BPD-004	D6-402	CUB6D4	GP2-333-402	PT624	6TM-D4	
C8	.033	200	79015	BPD-03	DF-303	CUB6S33		PT4133	4TM-S33	
C9	.0022	600	73595	BPD-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C10	.01	400	73561	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C11	.022	400	73562	BPD-02	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C12	.1	400	73551	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C13	.047	400	73553	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R4	120K		502412	BTS-120K	
R5	100K		502410	BTS-100K	
R6	12K		502312	BTS-12K	
R7	220K		502422	BTS-220K	
R8	220K		502422	BTS-220K	
R9	3900Ω		502239	BTS-3900	
R10	15Meg		502615	BTS-15Meg	
R11	470K		502447	BTS-470K	
R12	12K		502312	BTS-12K	
R13	470K		502447	BTS-470K	
R14	100K		502410	BTS-100K	
R15	82Ω	1	31959	BTA-82	
R16	1000Ω	1	512210	BTA-1000	
R17	15Ω	1	38859	BTA-15	
R18	15Ω	1	38859	BTA-15	
R19	33Ω	1	512033	BTA-33	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4000Ω	3-4Ω	100466	Z1002	A-2901	A-3823	24S61	S-53X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	RCA TYPE No.	
SP1	$6\frac{1}{2}$"	PM	3-4Ω	100464	6A21	229S1	
SP2	$3\frac{1}{2}$"	PM	6-8Ω	100465	3A15TZ6.6		
SP3	$3\frac{1}{2}$"	PM	6-8Ω	100465	3A15TZ6.6		

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	RCA Victor PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.100A	100654	1005A	RS150	6S150	6P2	150	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	RCA Victor PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	100653	55-T	GD-J	47	0-1 or S-1	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

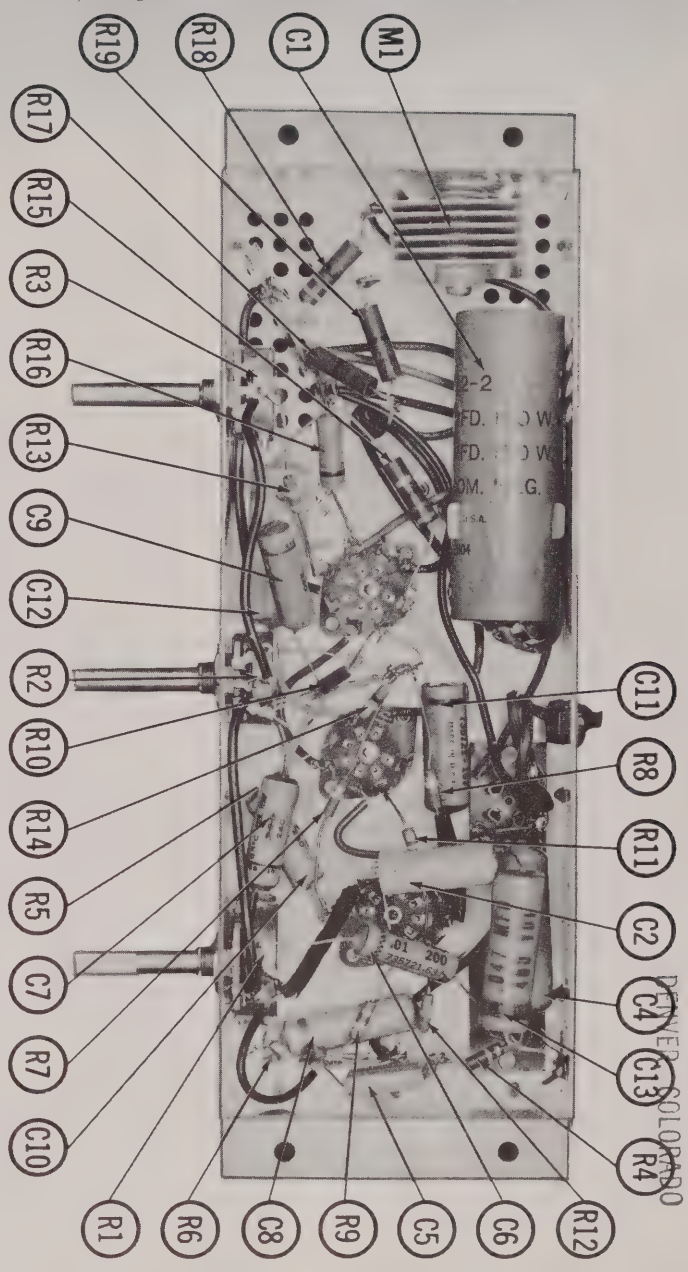
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	RCA Victor PART No.	JENSEN PART No.	WALCO PART No.	
M3		†S-66 or ♦†S-66SD or ♦S-66D	†W-75TPS or ♦†W-75DS or ♦W-75TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
	Knob Handle	100469 101730	Control (2 used) Plastic Only - Tan

CHASSIS—BOTTOM VIEW



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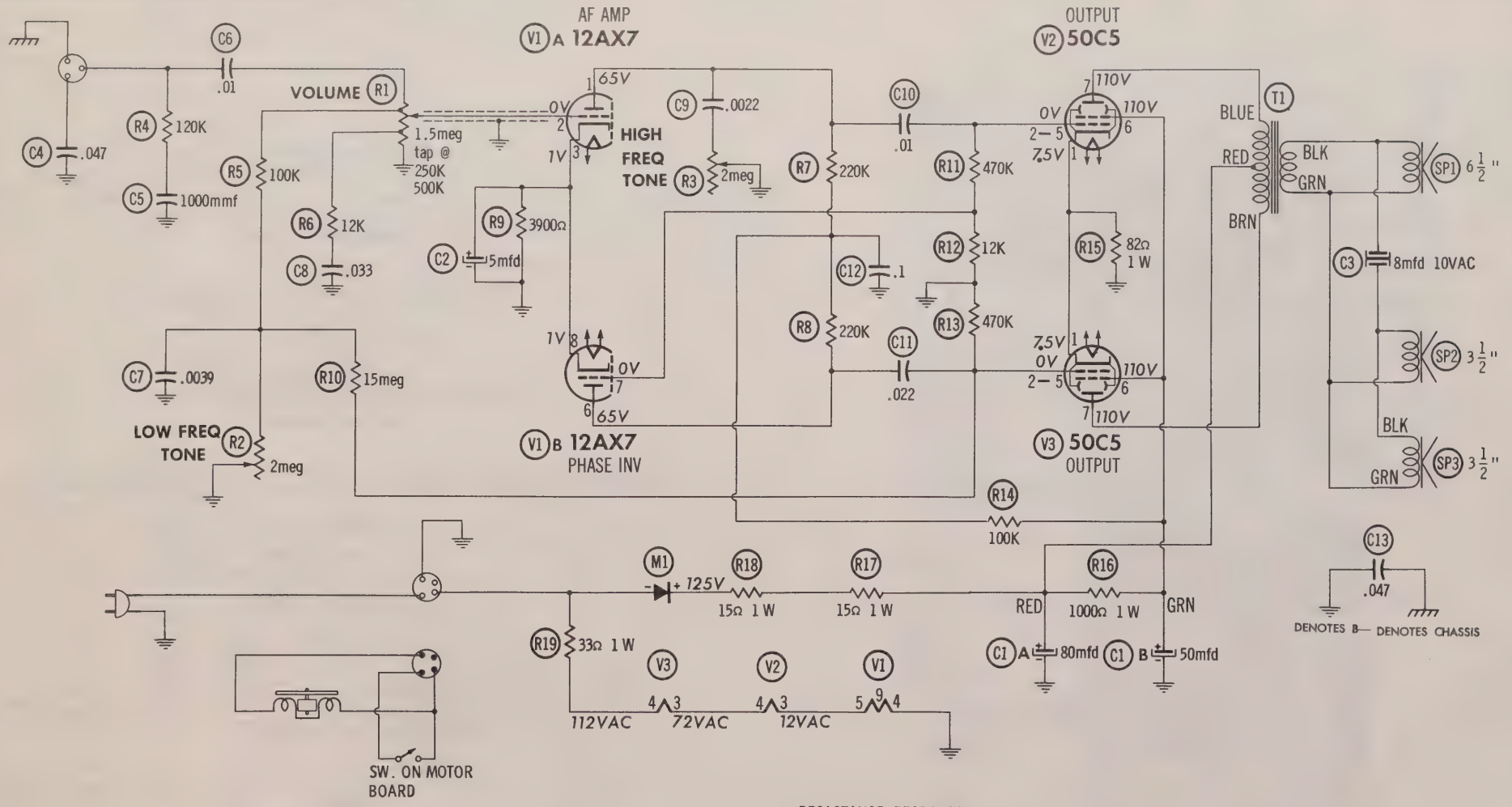
RCA VICTOR MODEL 7-HFP-1



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†320K	1.5Meg	3900Ω	0Ω	12Ω	†320K	12K	3900Ω	6Ω
V2	50C5	82Ω	480K	12Ω	72Ω	480K	†1000Ω	†240Ω		
V3	50C5	82Ω	470K	72Ω	112Ω	470K	†1000Ω	†270Ω		

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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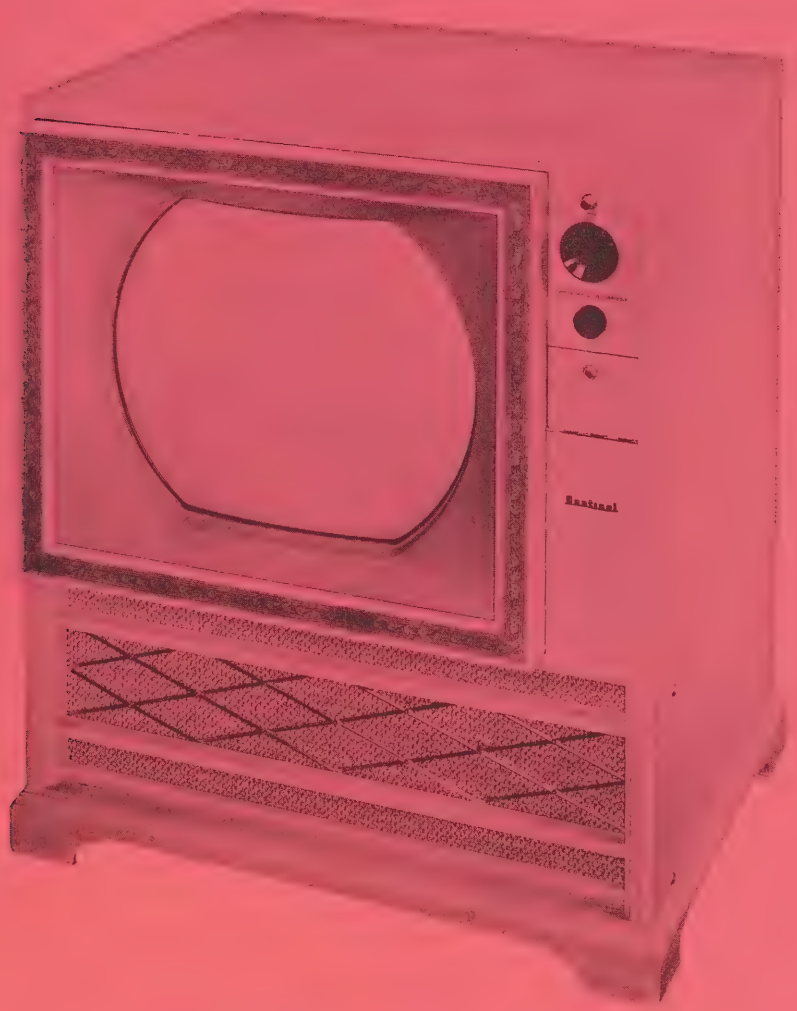

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SENTINEL
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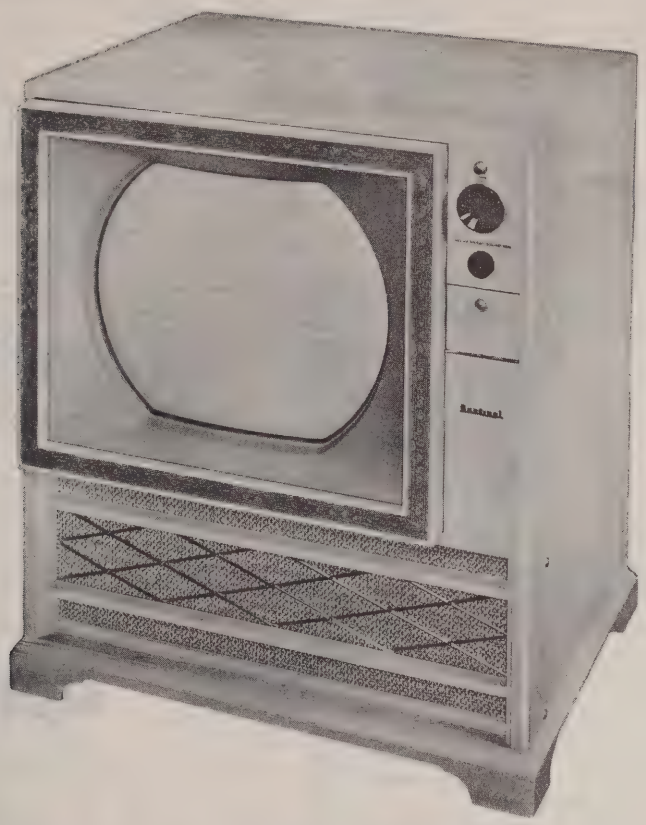

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SENTINEL MODELS 1U-816, 1U-826

SENTINEL MODEL 1U-816

TRADE NAME	Sentinel Models 1U-816, 1U-826
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster St., Evanston, Illinois Sentinel Radio Co., Fort Wayne 4, Indiana
TYPE SET	Color Television Receiver
TUBES	Twenty-eight
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 3.35 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC Sound IF 41.25MC (Intercarrier)

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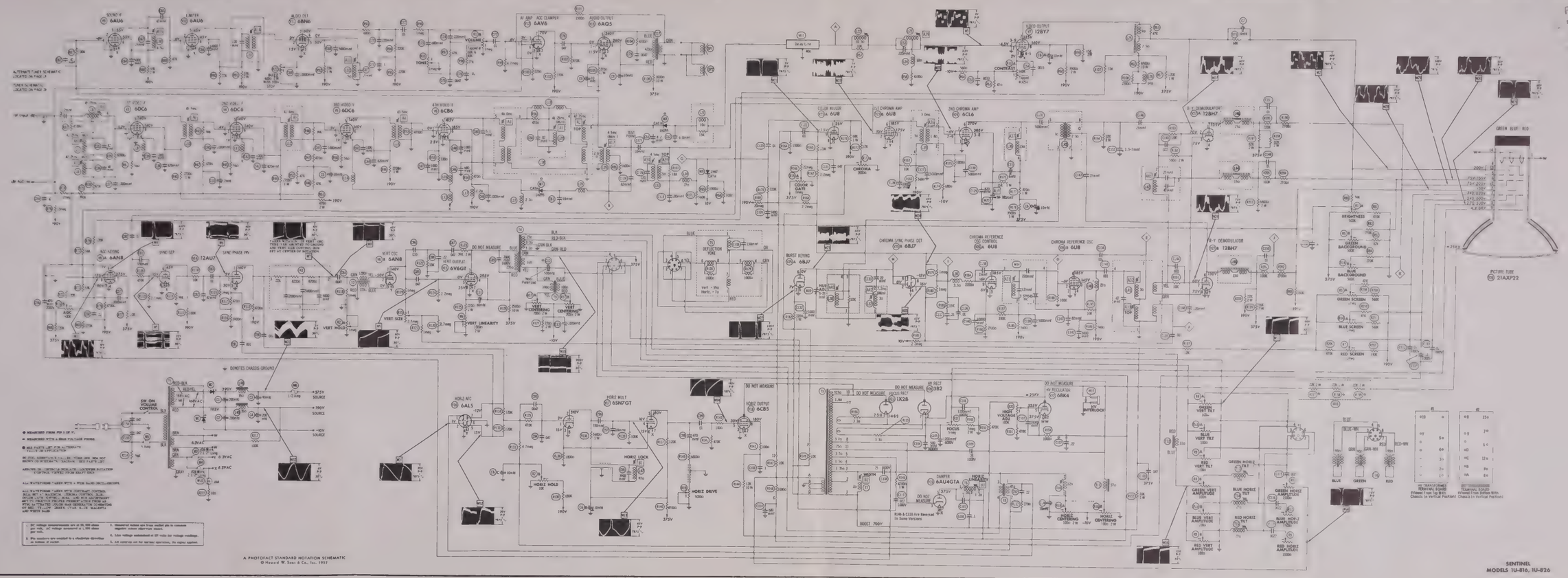
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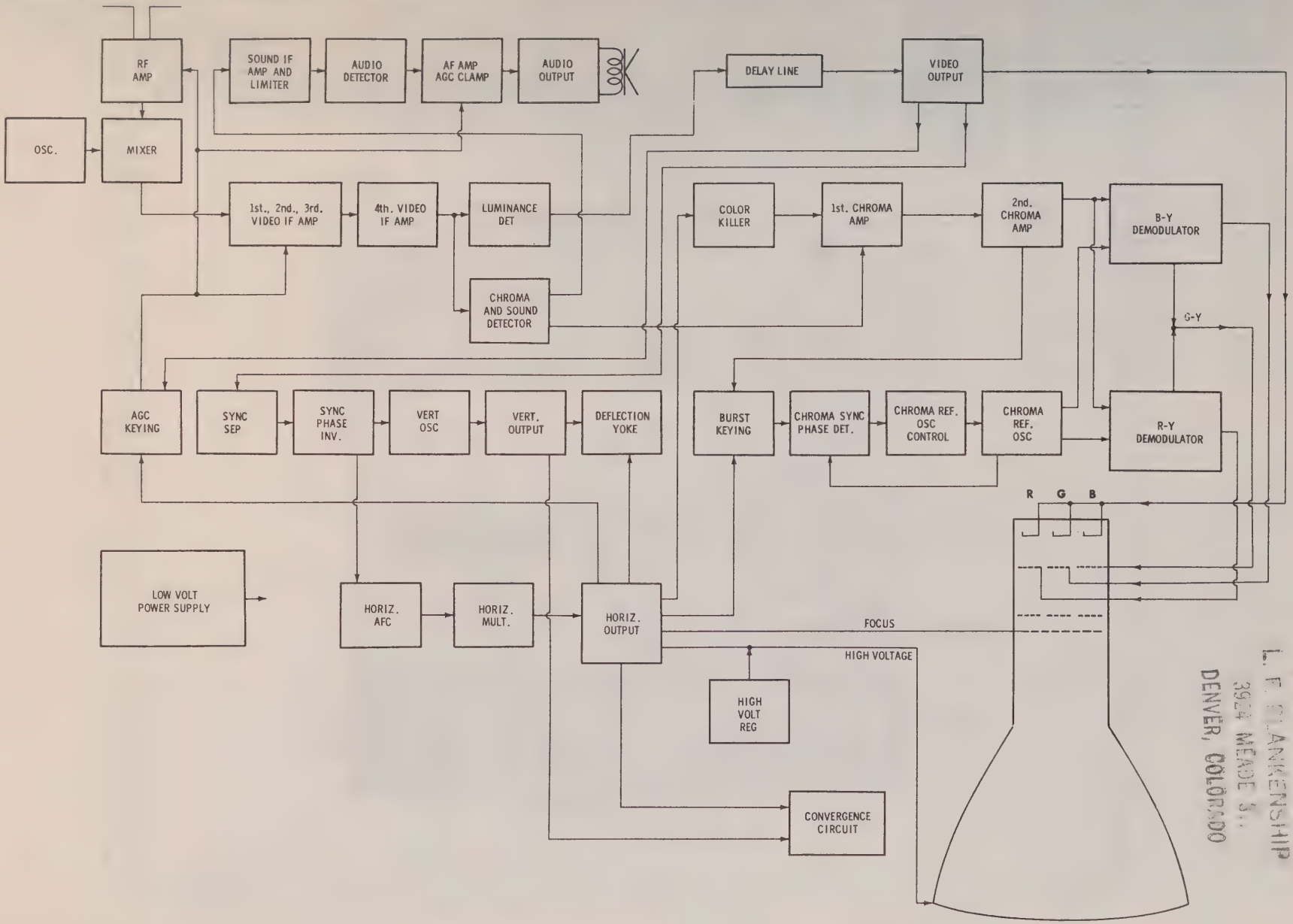

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BLOCK DIAGRAM

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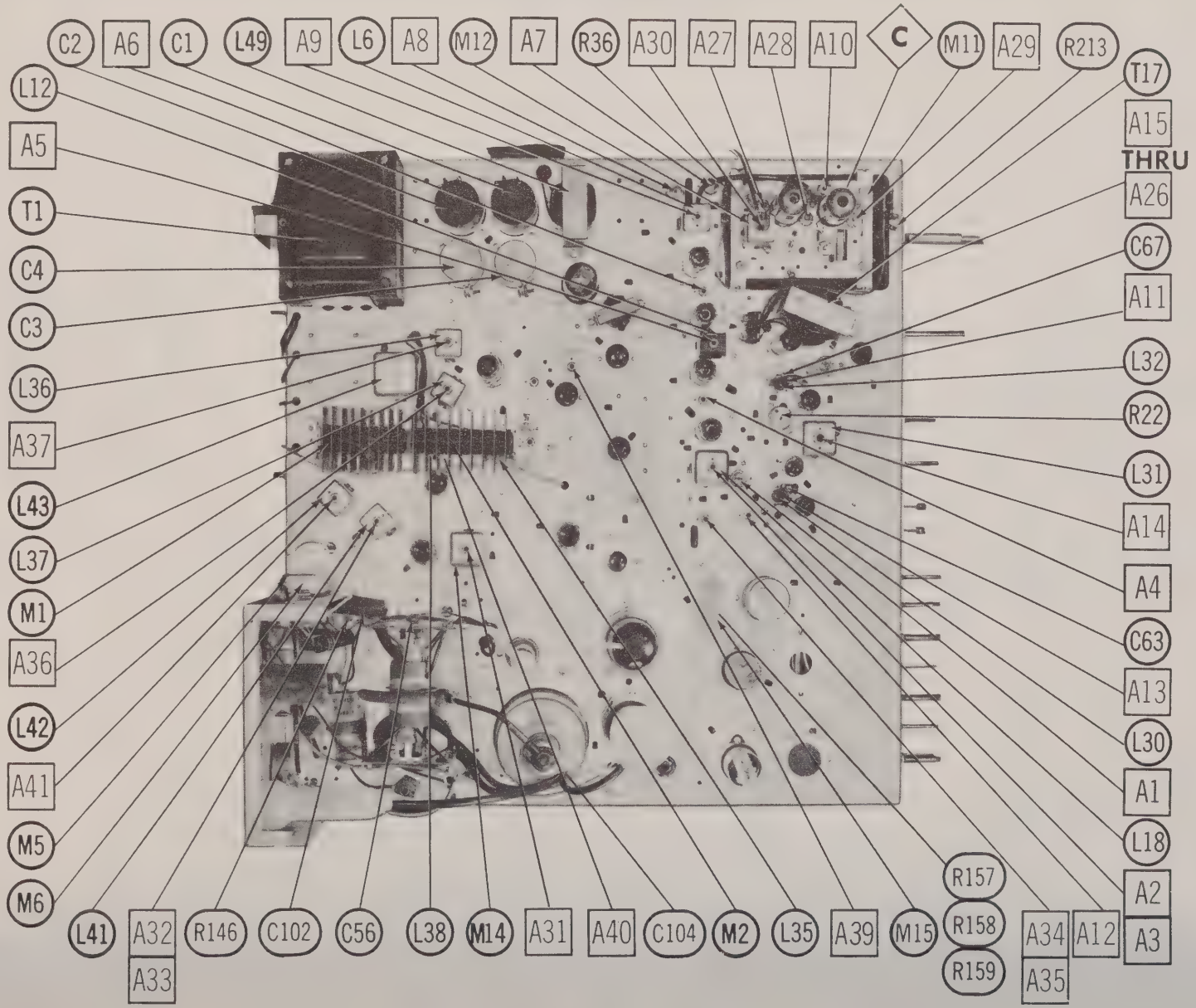

CHASSIS TOP VIEW

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MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.
Turn the horizontal drive control (R19) as far clockwise as possible without the presence of vertical white lines or compression near the center of the picture.
Adjust the horizontal centering control (R18) to center picture preferably while viewing a test pattern.
Set the horizontal hold control (R2B) to its mid-range position. Adjust the horizontal lock slug (B1) counter clockwise while switching on and off channel until picture looses sync. Turn B1 clockwise and note the number of diagonal bars just before the picture pulls into sync. There should be less than two bars if the horizontal circuit is operating properly. Continue turning B1 clockwise while switching on and off channel until sync is again lost, then turn B1 counter clockwise and note the point where picture falls into sync. Turn B1 one more half turn counter clockwise.
Adjust the horizontal width slug (B2) for a picture slightly wider than is necessary to fill the picture mask horizontally. Remove 400MA fuse and connect a 0-500MA meter across the 400MA fuse holder and adjust the horizontal linearity slug (B3) for MINIMUM reading on the meter.

HIGH VOLTAGE ADJUSTMENT

Connect DC voltmeter across cathode resistor (R154) between pin 1 of 6BK4 (V22) and 375 volt line.
Adjust the "HV ADJUST" control for . 7 volts on the low DC volt scale.
Measure the high voltage at the plate cap of V22 using a 30,000 volt probe attached to the voltmeter. If voltage is higher than 25,000 volts, adjust "HV ADJUST" so that it does not exceed 25,000 volts.

COLOR PURITY ADJUSTMENT

Allow a 15 minute warm-up period for the receiver and equipment.
Check the horizontal linearity with a cross hatch or vertical bar generator and readjust if necessary for good linearity. Set the horizontal and vertical hold controls for proper sync with an on the air signal.
Switch to an unused channel and connect a dot generator to the receiver following instructions of generator manufacturer. Adjust dot generator for a stable pattern. Do not use vertical or horizontal hold controls on the receiver for this purpose.
Turn all vertical and horizontal amplitude and vertical tilt controls to full counter clockwise position.
Pull all edge magnets to full out position. These are located at the outer rim of the picture tube.
Check position of Convergence Yoke Assembly which is located behind the deflection yoke assembly. The Blue magnet should be directly over the blue gun and the assembly should be located about 2 and 7/8 inches from the front of the picture tube base.
By adjusting the knurled screws on the "Blue, Green and Red positioning magnets", converge the dots at the center of the screen. Do not use amplitude or tilt controls to converge the dots.
Loosen the two screws at the base of the deflection yoke bracket and slide the assembly back from the bell of the picture tube.
Remove the dot generator connection from the antenna terminals and connect a jumper across the terminals.
Turn the contrast control fully counter clockwise.
Turn the red screen control to the full clockwise position. Turn the brightness control up to a bright raster. Connect clip leads from the blue and green grids of the picture tube to the chassis. Rotate the purity magnet or each ring of the magnet until a pure red field is located at the center of the screen. Disregard color contamination at the edges of the screen.
Slide the deflection yoke forward until the maximum overall red screen is obtained over the entire screen. Do not tilt the yoke.
Readjust the purity magnet to obtain the best overall red screen.
Tighten the yoke.
To check the blue field, remove the clip lead from the blue grid and connect it to the red grid. Turn the "red screen" control down and the "blue screen" control up.
The green field is checked by moving the clip lead from the "green grid to the blue grid", turning the "blue screen" control down and the "green screen" control up. If overall red, blue or green purity cannot be obtained (disregarding slight edge contamination) the purity adjustments should be repeated. If overall red, blue and green purity is still unobtainable, a slight compromise of the colored fields should be made with the red being favored slightly.
Connect the blue and green grids of the picture tube to ground with clip-leads. Turn the "red screen" control to the maximum clockwise position.
Adjust the edge magnets to eliminate all color contamination from the edge of the picture screen. Adjust the receiver for a white raster. See "Screen and Background Control Adjustments".

DYNAMIC CONVERGENCE ADJUSTMENTS

Set all amplitude and vertical tilt controls fully counter clockwise. Set the horizontal tilt controls to center of their most effective ranges.
Adjust the blue, green and red positioning magnets located on the Convergence Yoke Assembly to statically converge the dots at the center of the screen. The blue dot may be moved horizontally by adjusting the Blue Beam Corrector Magnet.
Turn all amplitude and vertical tilt controls up one fourth turn. Adjust the "Red and Green horizontal amplitude and tilt controls" until the red and green dots are parallel to each other in a horizontal plane throughout the horizontal row of dots across the screen.
Next, the Blue Horizontal amplitude and tilt controls are used to bring the blue dot into line with the red and green dots horizontally.
The blue vertical amplitude and tilt controls are then adjusted to position the blue dot so that the separation between the three dots are equal in a vertical direction. These adjustments are made while concentrating on the center vertical line. The red and green vertical amplitude and tilt controls are then adjusted to position the red and green dots so that the center row of vertical dots are spaced equally apart and parallel to each other in a vertical direction.
If necessary, readjust the horizontal amplitude and tilt controls so that they separate equally and parallel to each other in a horizontal direction.
Carefully inspect all groups of dots as to separation and plane making slight adjustments if necessary.
Using the Red, Blue and Green Positioning Magnets, converge the dots. Only very slight adjustments should be made to correct convergence.

BACKGROUND AND SCREEN CONTROL ADJUSTMENTS

Set the brightness control slightly above viewing level. Set Chroma, Contrast, Green screen and background, Blue screen and background, and Red screen control fully counter clockwise.
Set the Blue background, Green background and Red screen one fourth turn clockwise. Color of raster should now be red. If color is purplish, increase red screen and reduce blue background slightly. If color is yellowish, reduce green background. Rotate the blue screen slowly clockwise until the color of the raster becomes a pale purple. If blue screen has no effect on the color of the raster, turn up the blue background just below the point where the screen starts to turn bluish.
Advance the green screen control until the raster becomes white. If the green screen control has no effect on the color, turn up the green background control slightly. A slight readjustment of the Red, Green and Blue screen controls may be necessary to produce a good white picture. If the raster still has a color tint after making these adjustments, carefully reduce the screen control relating to the color of the picture color. If the color is a yellowish tint, turn the blue screen up slightly. If the color is cyan (greenish blue), turn up the red screen slightly. If the color is purplish, increase the green screen slightly.
Rotate the contrast control clockwise one fourth turn, reduce the brightness until only the brightest portions of a telecast picture are visible.
Do not readjust any screen controls. Adjust ONLY the blue and green background controls until the brightest portions of the picture become white.
Turn the brightness control up to normal level. There should be no color tinting of the picture between low brightness setting and just above normal brightness setting. If tinting occurs at high settings of brightness, the screen controls must be readjusted slightly. If tinting occurs at low brightness setting, the Blue or Green background controls must be readjusted slightly. It is important that the screen and background controls be adjusted properly for a black and white picture as this will affect the coloring of a color telecast.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS: READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard should be eliminated. This may be done by disconnecting pin 3 of the horizontal output tube (V18) from the chassis and inserting a 3,000, 10 watt resistor from pin 3 of V18 to chassis. Then remove the horizontal multivibrator tube (V17) from its socket.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded side of C10. Connect the positive lead to chassis. Use only enough signal generator output to provide usable indication on VTVM. The local oscillator may be disabled by removing the oscillator strip for an unused channel and switching the channel selector to that channel. This will reduce the possibility of erroneous indications during alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube (V2). Low side to chassis.	41.25MC (unmod)	Any	DC probe thru 10K to point Ⓐ. Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	43.75MC	"	"	A3	Attenuate signal generator output to maintain 1 volt at VTVM. Adjust for maximum deflection.
3.	"	"	46.0MC	"	"	A3	Adjust for maximum deflection. Repeat steps 1 thru 3 until no change is noted.
4.	"	"	45.5MC	"	"	A4	Attenuate signal generator output to maintain 1 volt at VTVM. Adjust for maximum deflection.
5.	"	"	41.4MC	"	"	A5	"
6.	"	"	45.5MC	"	"	A6	"
7.	"	"	47.25MC	"	"	A7	Adjust for MINIMUM deflection.
8.	"	"	41.25MC	"	"	A8	"
9.	"	"	45.75MC	"	"	A9	Attenuate signal generator output to maintain 1 volt at VTVM. Adjust for maximum deflection.
10.	"	"	42.75MC	"	"	A10	"

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment". In steps 13 through 14 adjust for -4 volts bias. Remove bias to observe trap markers. If sweep generator has no built-in marker, couple a separate marker loosely to sweep generator output. Attenuate sweep generator output to provide not more than 6 volts peak to peak on scope. Connect a 68 ohm carbon resistor across sweep generator output.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.001MFD	High side thru .001MFD capacitor to pin 5 (plate) of 3rd Video IF amplifier tube (V3). Low side to chassis.	44.0MC (100MC Swp)	41.25MC 41.65MC 45.0MC 47.25MC	Any	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A1, A3, A5	Adjust A3 and A5 for response curve similar to Fig. 1. If necessary, SLIGHTLY retouch A1 to place 41.25MC trap marker in trap notch as in Fig. 1.
12.	"	High side to pin 1 (grid) of 1st video IF amplifier tube (V3). Low side to chassis near V3.	"	41.25MC 41.65MC 45.0MC 45.75MC 47.25MC	"	"	A4, A6, A8	Increase bias to -4 volts at ungrounded side of C30 and chassis. Attenuate sweep generator output to produce 6 volts peak to peak on scope. Adjust for response curve similar to Fig. 2. A4 affects 45. A5 affects bandwidth on low frequency end. A6 affects high frequency side and position of 45.75MC marker.
13.	Direct	High side to an ungrounded tube shield floating over converter tube (V2). Low side to chassis.	"	41.25MC 41.65MC 45.75MC 47.25MC	"	Vert. amp. thru detector (Fig. 5) to pin 5 (plate) of 1st Video IF amplifier tube (V3) Low side to chassis.	A8, A9, A10	Connect a short clip lead across the 47.25MC trap coil (L8). Check for response curve similar to Fig. 3. If necessary, adjust A8 and A10 for desired response. SLIGHTLY retouch A8 to place 41.25MC marker in trap notch as in Fig. 3. Remove short from L8.
14.	"	"	"	41.25MC 41.65MC 45.0MC 45.75MC 47.25MC	"	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.		Check for overall IF response curve similar to Fig. 4. If necessary, SLIGHTLY retouch A4, A5 and A6 for desired response. Check position of 41.25MC and 47.25MC traps. If necessary, increase generator output and SLIGHTLY retouch A1 (41.25MC) and A7 (47.25MC) to place markers in trap notches as in Fig. 4.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR, AM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set volume control at low volume level.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	.01MFD	High side to point Ⓑ. Low side to chassis.	4.5MC (400% Mod) (50KC Swp)	4.5MC	Any non-interfering channel.	Across secondary of audio output trans. (T16).	A11	Set bass control (R32) 90° from maximum clockwise rotation. Adjust A11 for maximum 400% indication on scope.
16.	"	"	"	"	"	"	A13, A13, A14	Attenuate generator output so that signal is below the limiting level of the 6BN6 as evidenced by background hiss in the speaker. Adjust A12, A13 and A14 for maximum 400% indication on scope.
17.	"	"	Not used.	4.5MC (400% Mod)	"	"	R32	Use a high generator output and adjust R32 for MINIMUM 400% indication on scope.
18.	"	"	4.5MC (400% Mod) (50KC Swp)	4.5MC	"	"	A11	With volume control at low level, retouch A11 for maximum 400% indication on scope.

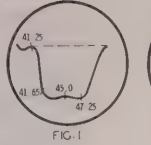


FIG. 1

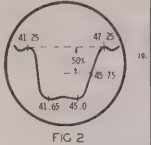


FIG. 2

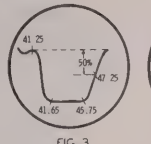


FIG. 3

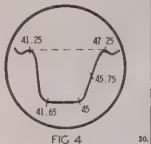


FIG. 4

FIG. 5

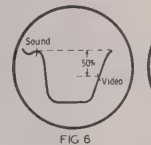


FIG 6

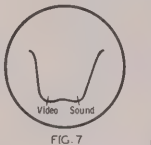


FIG. 7

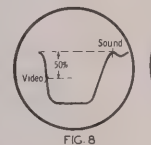


FIG. 8

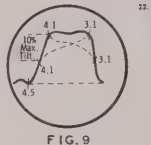


FIG. 9

OSCILLATOR ALIGNMENT

Replace the local oscillator strip back in tuner. The channel oscillator adjustment screws are reached thru a hole just to the left of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel. Use only enough sweep generator output to provide usable pattern on scope. Leave bias connected as under "Overall Video IF Response Check". Also connect a jumper from ungrounded side of C10 to the tuner AGC terminal.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	215MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A15	Adjust to place sound marker as in Fig. 6. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A16	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A17	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A18	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A19	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A20	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A21	
			83MC (10MC Swp)	83.25MC 87.75MC	6		A22	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A23	
			99MC (10MC Swp)	87.25MC 91.75MC	4		A24	
			93MC (10MC Swp)	91.25MC 95.75MC	3		A25	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A26	

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	13	Vert. amp. thru 10K to point Ⓒ. Low side to chassis.	A27, A28, A29	Adjust for response similar to Fig. 7 with markers above 90%.
21.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		If markers fall below 70% on any channel, make compromise adjustment of A27, A28 and A29 with channel switch set to that channel, then check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			83MC (10MC Swp)	81.25MC 85.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

44MC TRAP ADJUSTMENT

The IF trap adjustment (A30) is for the purpose of eliminating interference in the IF range. Tune to the channel on which interference is noted and adjust A30 for MINIMUM interference. Check to see that reception on channel 2 has not been affected.

OVERALL VIDEO IF AND TUNER RESPONSE CHECK

Connect bias as under "Overall Video IF Response Check" and connect jumper from ungrounded side of C10 to the tuner AGC terminal.
Use only enough sweep generator output to provide usable pattern on scope. Connect a 68 ohm carbon resistor across the sweep generator output.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
22.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.		Check for response curve similar to Fig. 8. If necessary, SLIGHTLY retouch A4, A5 and A6 for desired response.

CHROMA REFERENCE OSCILLATOR ALIGNMENT

1. Connect the DC probe of a VTVM to point Ⓓ. Common to chassis. Adjust the reference oscillator plate coil slug (A31) for maximum negative reading on VTVM. Remove VTVM.
2. Connect the vertical amplifier of scope to point Ⓔ. Low side to chassis. Adjust the bottom slug of the chroma reference oscillator coil (A32) for maximum indication on scope. Turn the top slug of the chroma reference oscillator coil slug (A32) two turns in either direction. Readjust A32 again for maximum indication on scope. Continue adjusting A32 and A33 until a position of A33 is found that gives maximum indication on scope. Check peak to peak voltage on scope at point Ⓔ.
3. Connect the vertical amplifier of scope to point Ⓕ. Low side to chassis. Check the peak to peak voltage at point Ⓕ. It should be the same as at point Ⓔ. If necessary, repeat step 3. Remove scope.
4. Connect a color bar generator across antenna terminals. Connect a short clip lead from point Ⓕ to chassis. Check color oscillator sync. If necessary, adjust A31 until the color bars appear to move slowly from one side of the screen to the other. Remove short from point Ⓕ and chassis. Color bars should now be in sync.

ALIGNMENT INSTRUCTIONS (cont)

CHROMA BANDPASS AMPLIFIER ALIGNMENT

Remove the chroma reference oscillator tube (6U8 - V26) from its socket. Connect a short clip lead from pin 9 of the color killer tube (V23) to chassis. Connect the negative lead of a 5 volt bias supply to point Ⓖ. Positive to chassis. Replace V17 in its socket. Remove 200 ohm, 10 watt resistor from pin 3 of V18 and reconnect V18 to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
23.	3900Ω carbon resistor	High side to point Ⓑ. Low side to chassis.	Not used.	4.5MC (unmod)	Any	Use VTVM DC probe to pin 1 (cathode) of chroma phase detector tube (V25). Common to chassis.	A34, A12	Attenuate signal generator output to maintain not more than 5 volts on VTVM. Adjust for MINIMUM deflection. Retouch A12 for MINIMUM deflection.
24.	"	"	"	4.1MC	"	"	A35	Adjust for maximum deflection.
25.	"	"	"	3.0MC	"	"	A36	"

26. Connect a .05MFD capacitor from pin 2 of 1st chroma amplifier V23B to chassis. Replace V26 in its socket. Connect vertical amplifier of scope to point Ⓗ. Low side to chassis. Adjust A37 for MINIMUM amplitude of hash on scope, then adjust the 2nd chroma amplifier screen by-pass trimmer (A38) for MINIMUM hash. Repeat adjustments of A37 and A38 until a position of A37 is found with MINIMUM hash. Remove .05MFD from pin 2 of V23B.

27.	3900Ω carbon resistor	High side to point Ⓑ. Low side to chassis.	3MC (10MC Swp)	3.1MC 4.1MC 4.5MC	Any	Vert. amp. thru detector (Fig. 5) to pin 6 of R-Y demodulator (V27B). Low side to chassis.		Couple a marker generator loosely to pin 2 of V23B (1st chroma amp. tube). Remove V25 from its socket. Check for response curve similar to Fig. 9. If necessary, SLIGHTLY retouch A35 and A36 for desired response.

3.58MC TRAP ALIGNMENT

Set brightness and contrast controls fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
28.	.005MFD	High side to point Ⓐ. Low side to chassis.	Not used.	3.58MC (400∿ Mod)	Any	Vert. amp. thru detector (Fig. 5) to pin 5 (cathode) of picture tube. Low side to chassis.	A39	Adjust for MINIMUM 400∿ modulation on scope. Remove 200Ω, 2 watt resistor from pin 3 of V18 to chassis.

7.2MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
29.	.01MFD	High side to pin 2 (grid) of 6CL6 (V24). Low side to chassis.	7.2MC (Unmod)	Any	DC probe to pin 8, plate of 6BJ7 (V25). Common to chassis.	A42	Adjust for MINIMUM deflection.

BURST COIL ADJUSTMENT

Connect a color bar generator across antenna terminals. Set the hue control at one half mesh position. Turn the contrast control fully counter clockwise. Turn the chroma control one half turn from its counter clockwise position. Connect DC probe of VTVM to pin 1 of color phase detector (V24). Common to chassis. Adjust the burst coil slug (A40) for maximum deflection on VTVM.

R-Y AND B-Y BALANCE ADJUSTMENT

Connect a color bar generator across antenna terminals. Connect the vertical amplifier of the scope through a low capacity probe to point Ⓙ. Low side to chassis.
Set the hue control to one half mesh. Adjust A41 until the color bars appear in their proper ratios as in Fig. 10, B-Y. When the proper relationship is obtained move the scope probe to point Ⓚ. Adjust A41 until the color bars appear on the scope in their proper ratio as in Fig. 10, R-Y. When ratios cannot be brought within reasonable tolerance, slight corrections can be made with the hue and chroma controls.

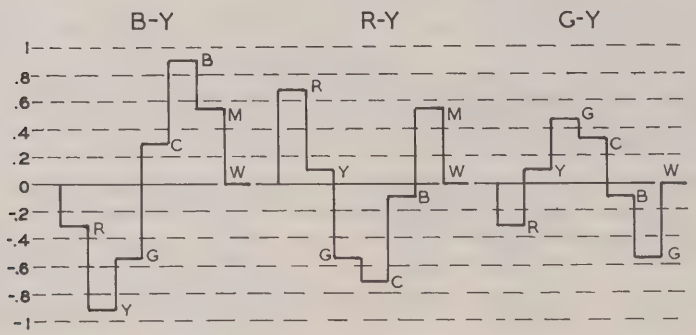
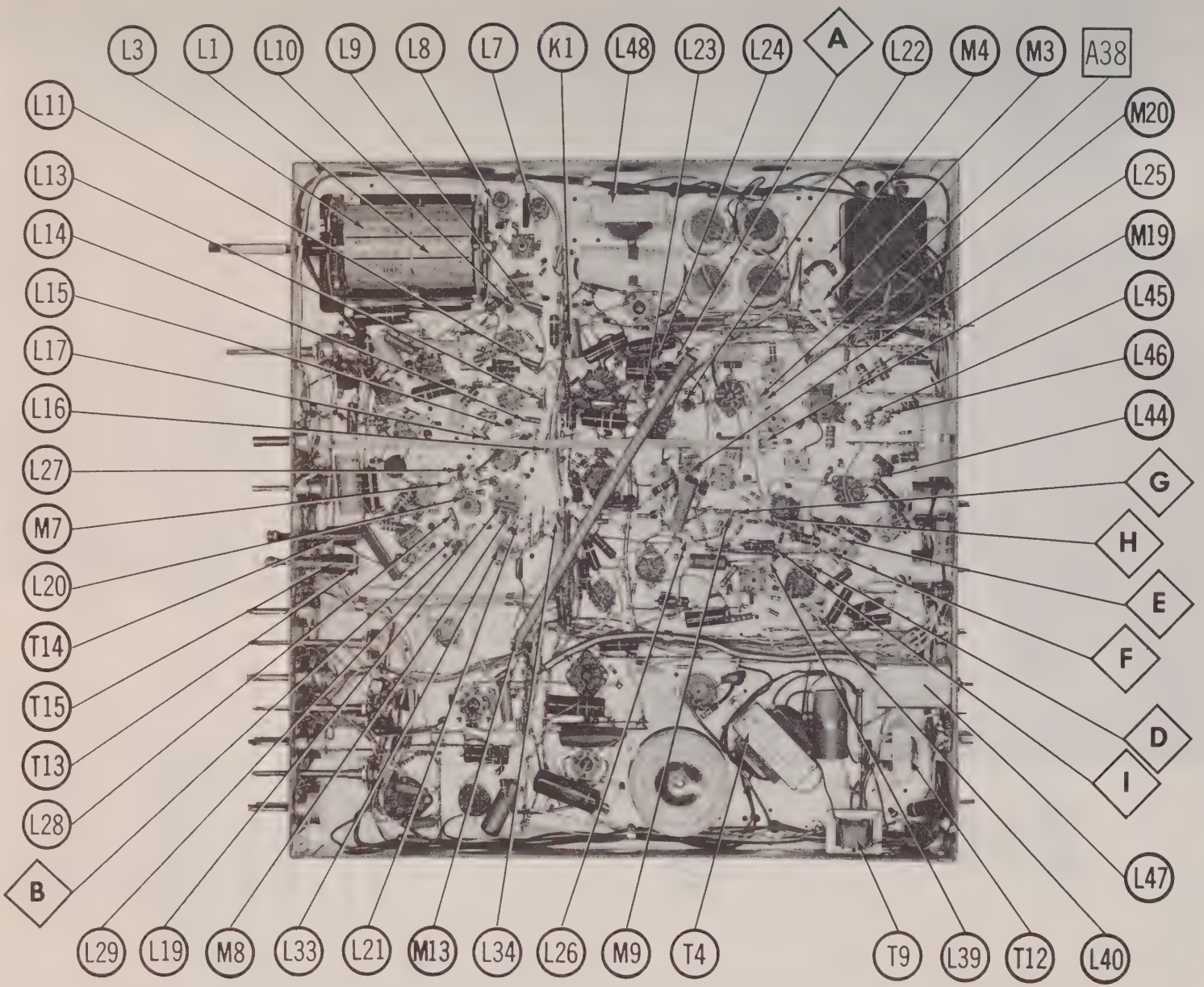
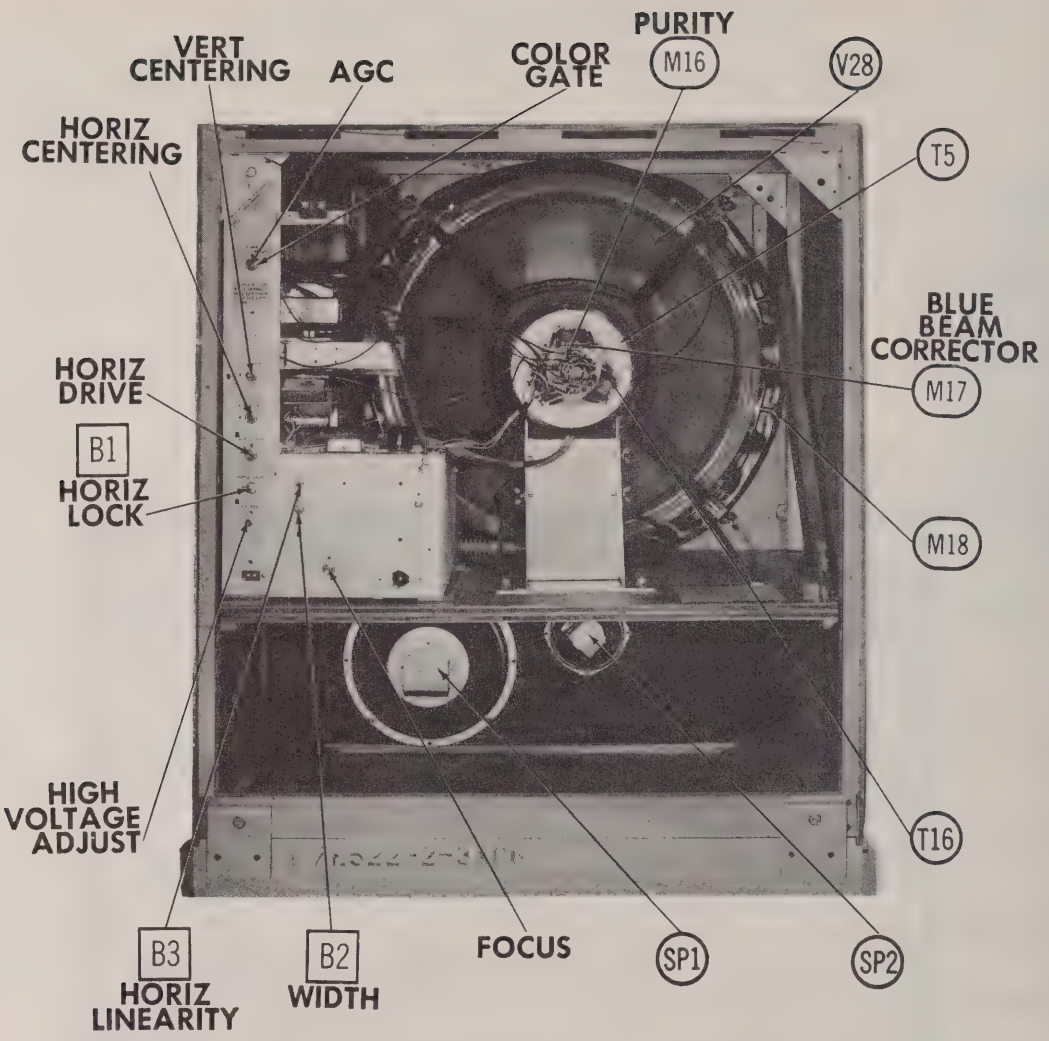


FIG. 10



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



CABINET—REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 10 push-on type control knobs from front panel of cabinet.

2. Remove 14 wood screws. Remove rear cover.

3. Remove picture tube socket, yoke plug, HV lead, speaker leads, convergence plug and ground lead.

4. Remove 4 wood screws from corner bracket at the upper left corner of cabinet.

5. Remove 2 wood screws holding control panel cover.

6. Remove 3 chassis bolts from bottom of chassis. Remove 2 chassis bolts front front of chassis. Remove chassis.

CABINET SHELL REMOVAL

1. Remove 14 wood screws. Remove rear cover.

2. Remove 4 screws located at the lower front sides of the cabinet (two on each side of cabinet).

3. Remove the top screw of each cabinet shell retaining bracket located at the lower rear of cabinet.

4. Remove cabinet shell by lifting straight up.

SPEAKER REMOVAL

1. Remove speaker leads at audio output transformer.

2. Remove 4 hex nuts from larger speaker and 2 hex nuts from small speaker.

3. Remove speaker from cabinet.

PICTURE TUBE REMOVAL

1. Remove cabinet shell as outlined under "Cabinet Shell Removal".

2. Remove the horizontal corrector magnet, purity magnet, convergence yoke assembly and complete yoke assembly including brackets.

3. Remove the safety glass panel assembly. Panel is held by 4 nuts located inside cabinet front.

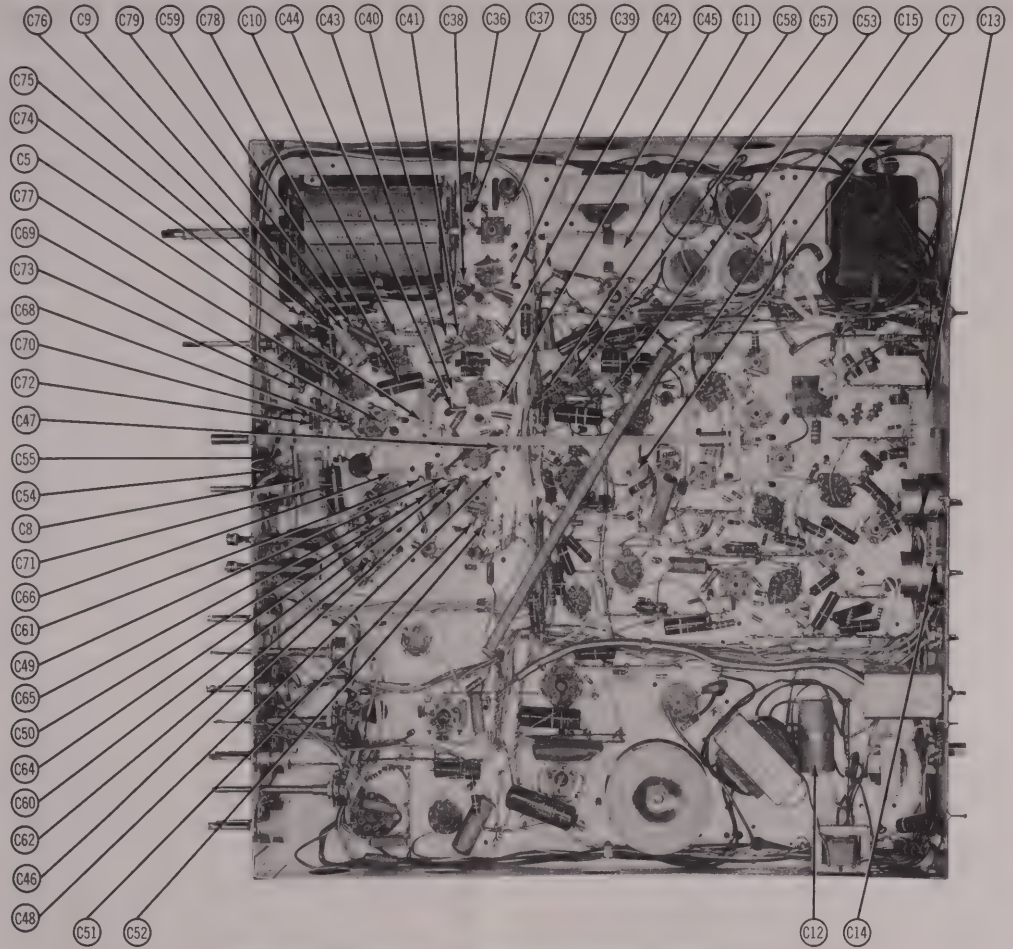
4. Place cabinet face down on a soft surface.

5. Remove the picture tube harness assembly and insulating shield.

6. Before removing the picture tube, make note of the position of the edge magnets, HV connector, banding around tube and the depth in which picture tube is seated in cabinet. The picture tube, banding and edge magnet assembly are removed from the cabinet as a unit.

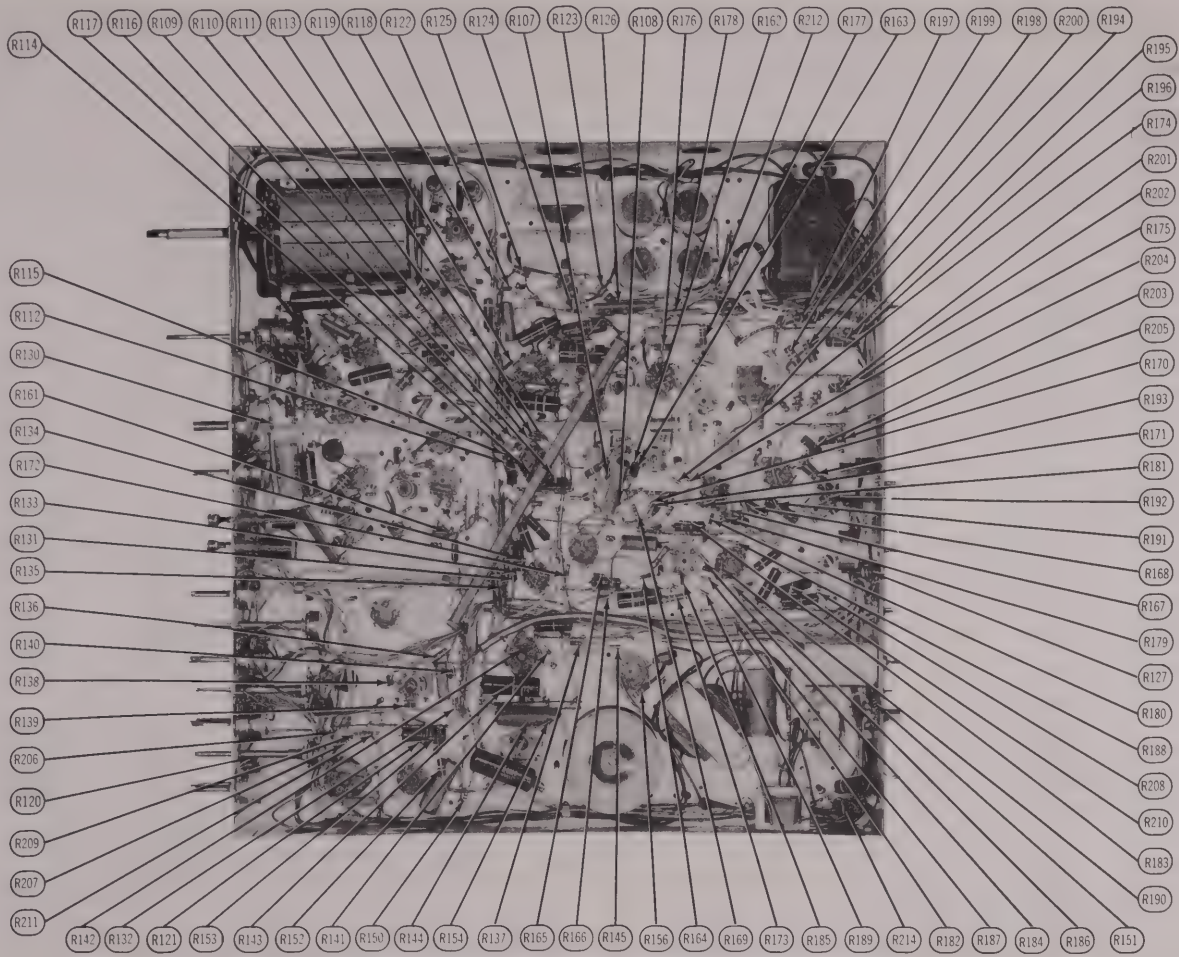
7. Remove picture tube assembly from cabinet.

8. Remove edge magnet assembly and the insulating band around picture tube.

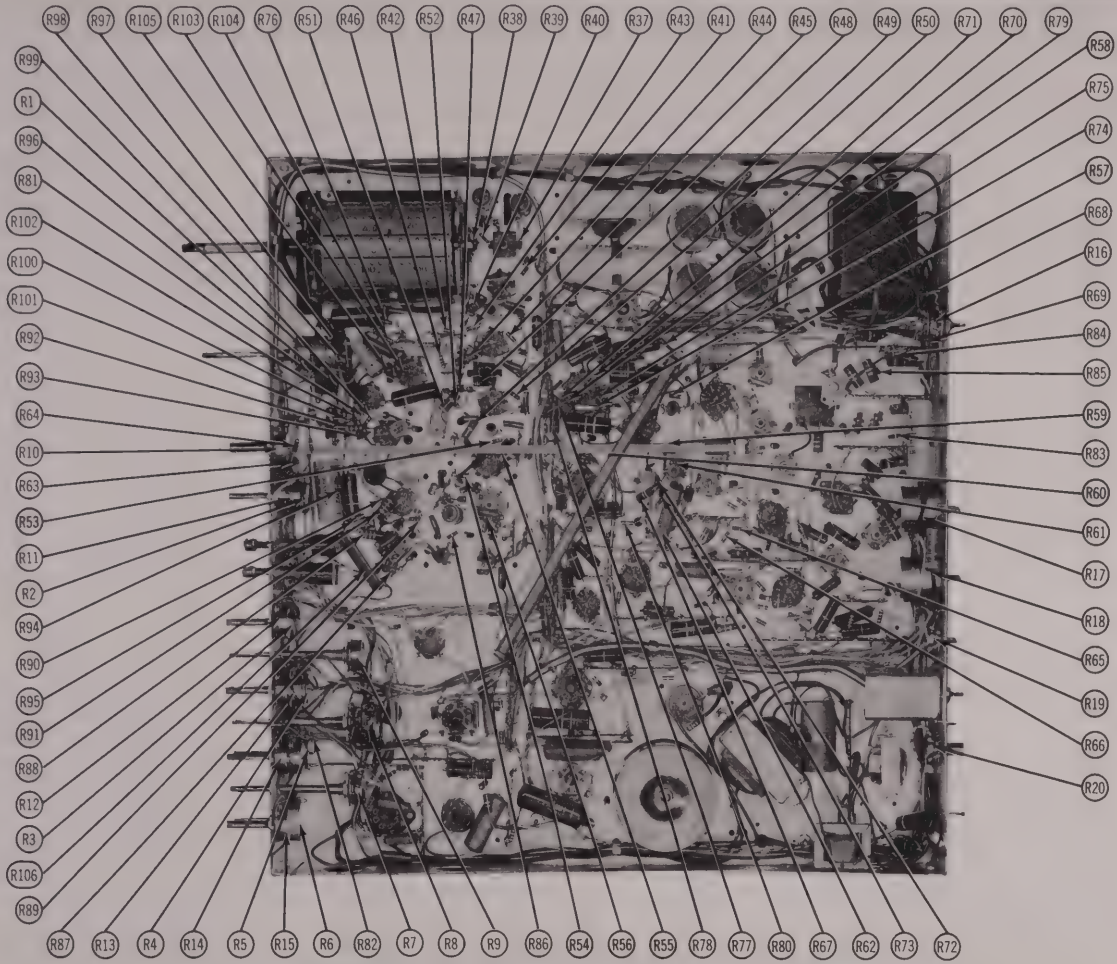


CHASSIS BOTTOM VIEW CAPACITOR IDENTIFICATION (C7-C79)

SET 344 FOLDER 13

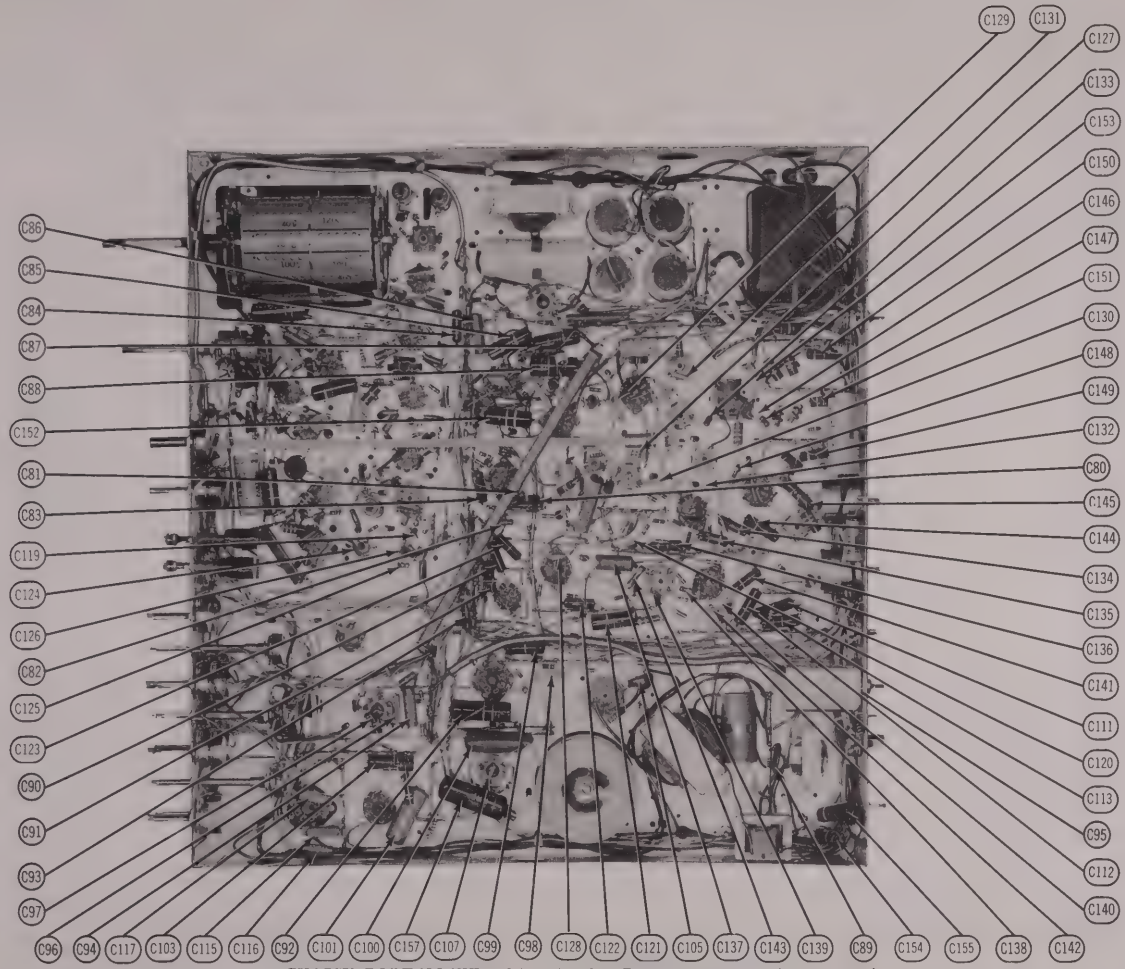


CHASSIS BOTTOM VIEW RESISTOR IDENTIFICATION (R107 - R212)

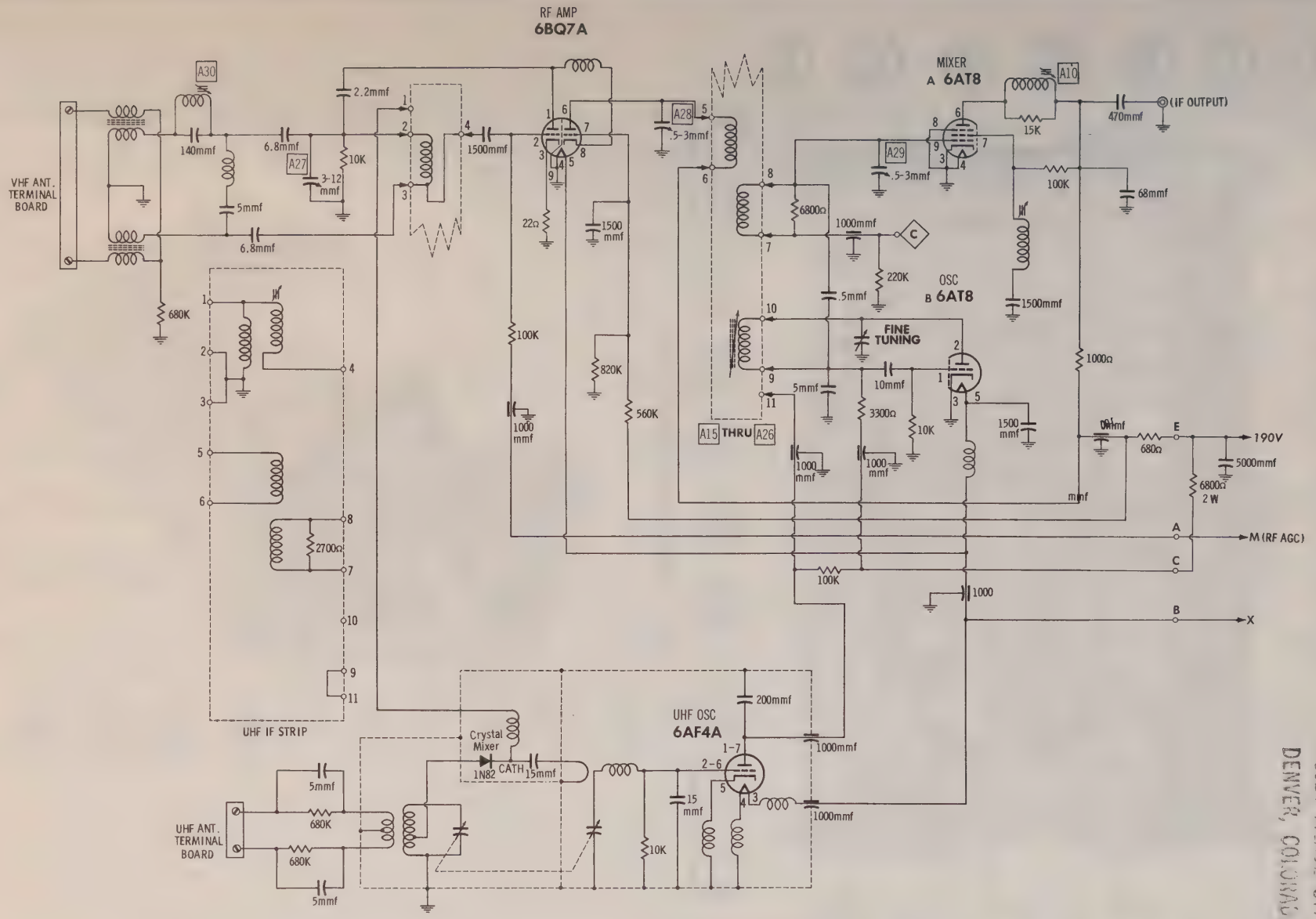


CHASSIS BOTTOM VIEW RESISTOR IDENTIFICATION (R1 - R106)

...SHIP
...LORADO



CHASSIS BOTTOM VIEW CAPACITOR IDENTIFICATION (C80 - C155)



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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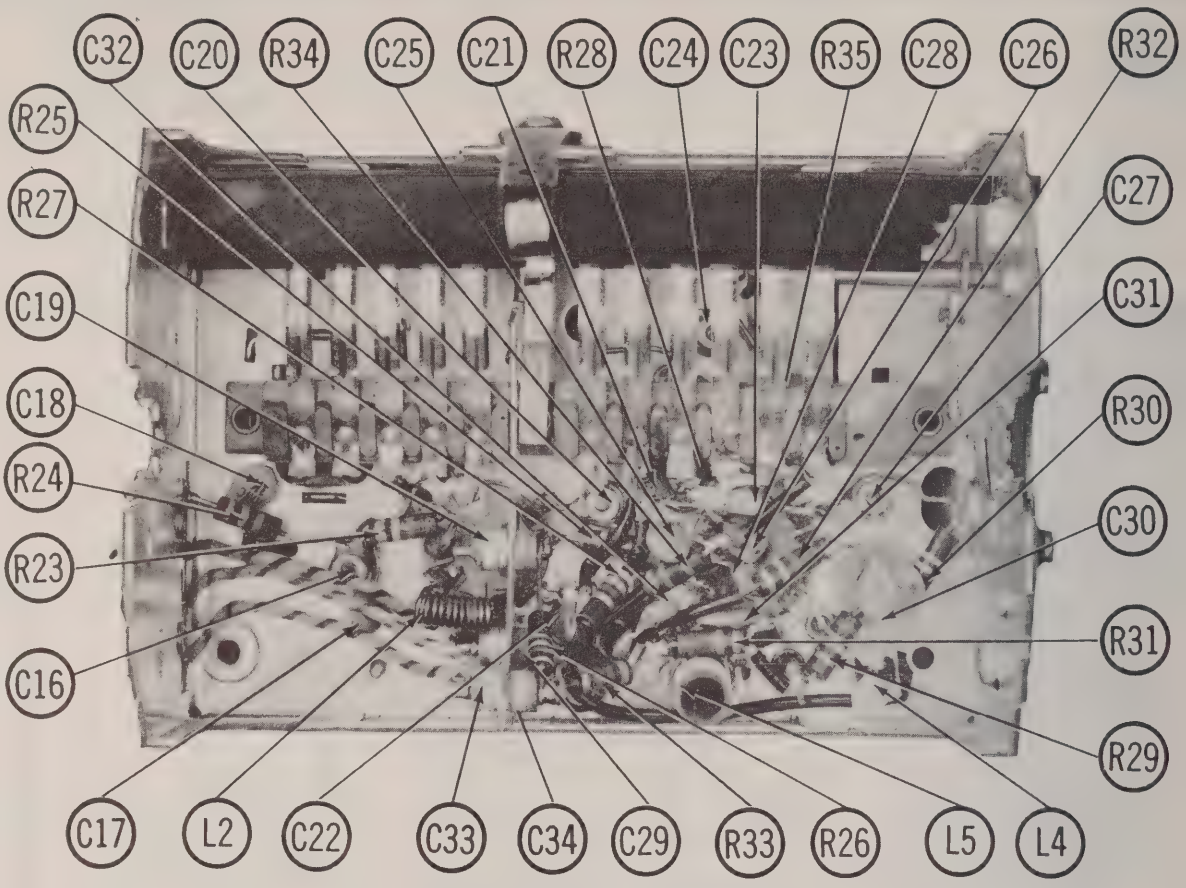
UHF-VHF Tuner Part No. 20E1290 Used With Some Versions

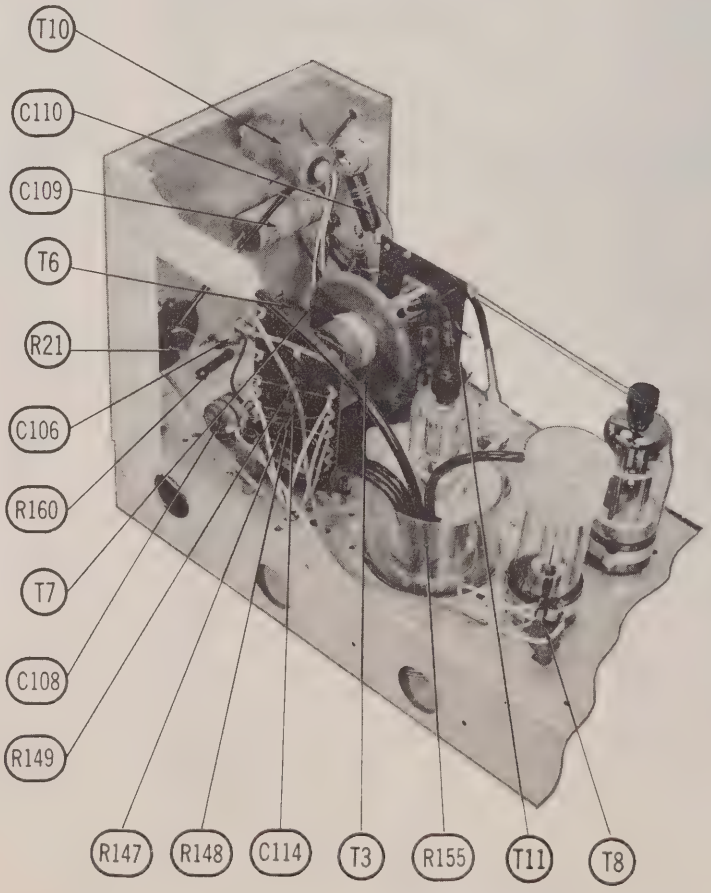
ALTERNATE VHF-UHF TUNER SCHEMATIC

SENTINEL MODELS 1U-816, 1U-826

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



RF TUNER-BOTTOM VIEW



HIGH VOLTAGE COMPARTMENT

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BZ7	
V2	Mixer Oscillator	6U8	
V3	1st. Video IF Amplifier	6DC6	
V4	2nd. Video IF Amplifier	6DC6	
V5	3rd. Video IF Amplifier	6DC6	
V6	4th. Video IF Amplifier	6CB6	
V7	Video Output	12BY7	
V8	AGC Keying-Vert. Osc.	6AN8	
V9	1st. Sound IF Amplifier	6AU6	
V10	Limiter	6AU6	
V11	Audio Detector	6BN6	
V12	AF Amp. -AGC Clamper	6AV6	
V13	Audio Output	6AQ5	
V14	Sync Sep. -Sync Phase Inverter	12AU7	
V15	Vert. Output	6V6GT	

ITEM No.	USE	TYPE	NOTES
V16	Horiz. AFC	6AL5	
V17	Horiz. Mult.	6SN7GT	
V18	Horiz. Output	6CB5	
V19	Damper	6AU4GTA	
V20	HV Rectifier	3B2	
V21	Focus Rectifier	1X2B	
V22	HV Regulator	6BK4	
V23	Color Killer-1st. Chroma Amplifier	6U8	
V24	2nd. Chroma Amplifier	6CL6	
V25	Burst Keying-Chroma – Sync Phase Detector	6BJ7	
V26	Chroma Ref. Osc. - Chroma Ref. Osc. Control	6U8	
V27	R-Y Demodulator - B-Y Demodulator	12BH7	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	SENTINEL PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V28	21AXP22			21AXP22 21AXP22A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SENTINEL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	200	250	25E94	AFHS1-37-30	XA0318	FP126	TMS-75	S-160	TVL-1547
C2	200	250	25E94	AFHS1-37-30	XA0318	FP126	TMS-75	S-160	TVL-1547
C3	90	450	25E95	AFH1-57	A0570	FP187	TMS-71	S-305	TVL-1850
C4	200	250	25E96	AFHS1-37-30	XA0318	FP126	TMS-75	S-160	TVL-1547
C5	10	25	25E8	PRS25V10	BR102	TC22	TD-10-25	FM-0210	TVA-1204
C6A	▲10	450	25E97	AFH4-10	D0480	FP434	TMQ-80	Q-330	TVL-4723
B	▲10	450							
C	10	25							
D	■10	450							
C7	4	150	25E99	PRS150V4	BR415	TC40	TD-4-150	FM-1504	TVA-1402
C8	10	450	25E70	PRS450V10	BR1045	TC72	TD-10-450	FM-4510	TVA-1705
C9	10	25	25E8	PRS25V10	BR102	TC22	TD-10-25	FM-0210	TVA-1204
C10	2	25	25E88	PRS50V2	BBR2-50	TC302	TD-2-25	MT-0502	TVA-1201
C11	60	450	25E104	PRS450V60	BR6045	TC79	TD-50-450	FMD-4530	TVA-1714
C12	500	3	25E89 (Note 1)	NP-PRS6V NP500	BRH610 † BRH610	TC412		MTH-06100† MTH-06100	R2243 *
C13	1000	15	25E90	PRS150V1000	BR1510	TC1501	TD-1000-15	S-020	TVA-1163
C14	10	25	25E8	PRS25V10	BR102	TC22	TD-10-25	FM-0210	TVA-1204
C15	4	150	25E99	PRS150V4	BR415	TC40	TD-4-150	FM-1504	TVA-1402

Note 1. Non-polarized unit.
† Connect negative leads together.
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C16	3-9		31B-207		829-10					
C17	3		13L8C03K	NP0-DI3	TCZ-3R3	Z007	TCO-3	ZT-553	5TCCB-V33	
C18	1000		13L8X102Z	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C19	1000		13M-28N1027-02							
C20	.5-3		31B-206		829-3		3115-D	CT565A		
C21	47		13L8Q470K							
C22	1.5		13L8C1R5C							
C23	47		13M20U470K-R							
C24	.5-3		31B-206		829-3		3115-D	CT565A		
C25	10		13L8UA100A							
C26	5		13L8UA050C							
C27	.5-3		31B-206		829-3		3115-D	CT565A		
C28	1000		13L8X102Z	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C29	800		13M-28N1027-03							
C30	220		13L12D221K	DI-00022	DD-221	G051	ED-221	UC-5322	5GA-T22	
C31	68		13L12U680H	N750-DI68	TCN-68	N038	TC7-68		5TCU-Q68	
C32	470		13L8X471Z	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C33	800		13M-28N1027-03							
C34	800		13M-28N1027-03							
C35	82	500		1469-000082	TCZ-82	22R5Q82	TCO-82		MS-482	
C36	68	500		1469-000068	TCZ-68	22R5Q68	TCO-68		MS-468	
C37	1000		23E4004-5	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C38	820		23E4000-32	SI820	D6-821	G067	ED-820		5GA-T82	
C39	1000		23E4004-5	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C40	1000		23E4004-5	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C41	820		23E4000-32	SI820	D6-821	G067	ED-820		5GA-T82	
C42	1000		23E4004-5	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C43	1000		23E4004-5	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C44	820		23E4000-32	SI820	D6-821	G067	ED-820		5GA-T82	
C45	1000		23E4004-5	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C46	680		23E4000-28	SI680	D6-681	TP50	GP-680	UC-5368	5GA-T68	
C47	1000		23E4004-5	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C48	1000		23E4004-5	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C49	1000		23E4004-5	BPD-001	DD-102	K069	ED-001	DC-521	5HK-D1	
C50	82	500		1469-000082	TCZ-82	22R5Q82	TCO-82		MS-482	
C51	8.2		23E4001-30	NP0-SI8.2		Z016	TCO-8.2			
C52	6.8		23E4001-17	NP0-SI6.8	TCZ-6R8	Z013	TCO-6.8	ZT-5568	5TCCB-V68	
C53	220		23E4001-28	NP0-SI220	D6-221	TZ38	ED-221		5TCC-T22	
C54	.0015	400	23E3405	DI-0015	D6-152	CUB6D15	GP-1500	GEM-6215	6TM-D15	
C55	.0033	400	23E3407	DI-0033	D6-332	CUB6D33	GP-3300	GEM-6233	6TM-D33	
C56	470	2000	23E4003-6	HD-30-470	DD30-471	V2T47	HD3-470	DC30347	20GA-T47	
C57	10000		23E4004-17	BPD-01	DD-103	K082	ED-01	DC-511	5HK-S1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	SENTINEL PART No.	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C56	.01	400	23E2400	BPD-01	DD-103	CUB4B2	GP-10000	GEM-4141	4TM-01	
C57	.47	350	23E5330			CUB1P47		GEM-3047	3TM-P47	
C60	5.1		23E4001-5	NPO-5S	TCZ-4R7	Z001	TCO-5	Z7-555	5TCUB-V47	
C61	10		23E4001-10	NPO-1E10	TCZ-10	TZ09	TCO-10	Z7-560	5TCC-Q	
C63	47		23E4000-14	8167	DE-470	TP29	GP-47	USC-5647	5GA-Q47	
C63	15		23E4001-15							
C64	5000		23E4004-15	BPD-005	DD-502	KD80	ED-005	DC-525	5HK-D6	
C65	47		23E4000-14	8167	DE-470	TP29	GP-47	USC-5647	5GA-Q47	
C66	10000		23E4004-17	BPD-01	DD-103	KD83	ED-01	DC-5U	5HK-S6	
C67	15		23E4001-19							
C68	5000		23E4004-15	BPD-005	DD-502	KD80	ED-005	DC-525	5HK-D6	
C69	10000		23E4004-17	BPD-01	DD-103	KD83	ED-01	DC-5U	5HK-S6	
C70	230		23E4000-23	8130	DE-22S	TP39	GP-220	USC-5322	5GA-T22	
C71	100	600	23E5401	P48M-1	DE-101	CUB4P1		GEM-4051	4TM-P1	
C73	01	600	23E2400	BPD-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C74	15		23E4001-28	8180	DE-15S	TP27	GP-150	USC-5368	5GA-T68	
C74	330		23E4000-22	8130	DE-22S	TP39	GP-220	USC-5322	5GA-T22	
C75	.0047	600	23E5403	BPD-047	DE-472	CUB4D47	GP-4700	GEM-4247	4TM-D47	
C76	.01	600	23E5410	BPD-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C77	.01	600	23E5410	BPD-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C78	.0047	600	23E5404	BPD-05	DE-503	CUB5D47		GEM-4247	4TM-D47	
C79	.0047	600	23E5408	BPD-047	DE-472	CUB4D47	GP-4700	GEM-4247	4TM-D47	
C80	.01	600	23E5410	BPD-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C81	330		23E4000-24	8130	DE-33S	TP43	GP-330	USC-5333	5GA-T33	
C82	47		23E4000-14	8167	DE-470	TP29	GP-47	USC-5647	5GA-Q47	
C83	.01	600	23E5410	BPD-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C84	.0047	600	23E5408	DE-0047	DE-472	CUB5D47	GP-4700	GEM-4247	4TM-D47	
C85	.047	600	23E5403	BPD-047	DE-503	CUB5E47		GEM-4347	4TM-E47	
C86	.033	600	23E5403	BPD-03	DF-303	CUB5E33		GEM-4133	4TM-E33	
C87	.047	600	23E5403	BPD-047	DE-503	CUB5E47		GEM-4347	4TM-E47	
C88	22	400	23E5416	P48M-22		CUB4P22		GEM-4022	4TM-P22	
C89	5000	1500	23E4003-11	HVD-50-22500	DDH0-502	VZ03	HD3-223	DC-5H22		
C90	.001	600	23E5404	DI-001	DE-102	CUB5D1	GP-1000	GEM-6142	6TM-D1	
C91	.001	600	23E5404	DI-001	DE-102	CUB5D1	GP-1000	GEM-6142	6TM-D1	
C92	22	400	23E5416	P48M-22		CUB4P22		GEM-4022	4TM-P22	
C93	.0047	600	23E5408	BPD-047	DE-472	CUB4D47	GP-4700	GEM-6247	6TM-D47	
C94	.0047	600	23E5408	BPD-047	DE-472	CUB4D47	GP-4700	GEM-6247	6TM-D47	
C95	.047	600	23E5403	BPD-047	DE-503	CUB4E47		GEM-6347	6TM-E47	
C96	3900	500	23E4005-64	1484-0039	1R5D39			MS-339		
C96	330	500	23E5500-77	1489-000033	5R5T33			MS-332		
C97	.01		23E4001-10		TCZ-1R	TZ21	TCO-1R			
C98	470	500	23E5500-40	1484-00047	5R5T47	ED-470		MS-347		
C99	.01	600	23E2400	BPD-01	DE-103	CUB4S1	GP-10000	GEM-6141	6TM-S1	
C100	.1	600	23E5416	P648M-1	DF-104	CUB4P1		GEM-6041	6TM-P1	
C101	.1	600	23E5416	P648M-1	DF-104	CUB4P1		GEM-6041	6TM-P1	
C102	.1	600	23E5416	P648M-1	DF-104	CUB4P1		GEM-6041	6TM-P1	
C103	.1	600	23E5416	BPD-05	DF-503	CUB5E47		GEM-6147	6TM-E47	
C104	500	25000	23E3003-7							
C105	1200	6000	23E4003-13			D200-123				
C106	1200	6000	23E4003-13			D200-123				
C107	10000		23E4004-17	BPD-01	DD-103	KD83	ED-01	DC-5U	5HK-S1	
C108	.35	1000	23E4006							
C109	.35	1000	23E4006							
C110	033	1000	23E3013	P108N-022		CUB1E33		GEM-1013	1TM-E33	
C111	01	600	23E3010	P068N-01	DDE6-103	CUB1E01		GEM-1001	1TM-E1	
C112	01	1000	23E3010	P068N-01	DDE6-103	CUB1E01		GEM-1101	1TM-S1	
C113	01	1000	23E3010	P068N-01	DDE6-103	CUB1E01		GEM-1101	1TM-S1	
C114	680		23E4000-38	8180	DE-68J	TP50	GP-680	USC-5388	5GA-T8	
C115	.0033	600	23E4005-59	DI-332	DE-332	CUB6D33	GP-3300	GEM-6332	6TM-D33	
C116	.0033	600	23E4005-59	DI-332	DE-332	CUB6D33	GP-3300	GEM-6332	6TM-D33	
C117	.0033	600	23E4005-59	DI-332	DE-332	CUB6D33	GP-3300	GEM-6332	6TM-D33	
C118	150		23E4003-9							
C119	100		23E4000-31	BPD-001	DD-101	G042	ED-101	UC-531	5GA-T1	
C120	5000		23E4004-15	BPD-005	DD-502	KD80	ED-005	DC-525	5HK-D6	
C121	.047	600	23E5403	BPD-05	DF-503	CUB5E47		GEM-6147	6TM-E47	
C122	.01	600	23E5410	BPD-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C123	.01	600	23E5410	BPD-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C124	82	500	23E4007-127	1489-000082	TCZ-82	2Z83-Q63	TCO-82		5TCC-Q	
C125	.01		23E4001-18	1489-0001	DK100	TZ09	TCO-10	Z7-541	5TCC-Q	
C126	130		500	1489-00013	TCZ-130	2Z82-T12	TCO-130		MS-318	
C127	5000		23E4004-15	BPD-005	DD-502	KD80	ED-005	DC-525	5HK-D6	
C128	01	1000	23E4004-17	BPD-01	DD-103	KD82	ED-01	DC-5U	5HK-S1	
C129	820	500	23E5500-45	1484-00082		1R5T82	ED-820		MS-382	
C130	01		23E4004-15	BPD-005	DD-502	KD80	ED-005	DC-525	5HK-D6	
C131	5000		23E4004-15	BPD-005	DD-502	KD80	ED-005	DC-525	5HK-D6	
C132	1000		23E4004-5	BPD-001	DD-102	K069	ED-01	DC-5U	5HK-S1	
C133	22		23E4001-39	NP0-223	TCZ-22	TZ24	TCO-22		5TCC-Q22	
C134	5000	600	23E5404	DI-001	DE-102	CUB5D1	GP-1000	GEM-6142	6TM-D1	
C135	5000	600	23E5404	DI-001	DE-102	CUB5D1	GP-1000	GEM-6142	6TM-D1	
C136	01	600	23E5410	BPD-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C137	25	150	23E5133 *	P38N-25		CUB1F25		GEM-3025	3TM-F25	
C138	3		23E4001-34	NP0-3S3 .2	TCZ-3R2	Z005	TCO-3.2		5TCCB-V32	
C139	5000		23E4004-15	BPD-005	DD-502	KD80	ED-005	DC-525	5HK-D6	
C140	10000		23E4004-17	BPD-01	DD-103	KD82	ED 01	DC-5U	5HK-S1	
C141	001	400	23E5404	DI-001	DE-102	CUB5D1	GP-1000	GEM-6142	6TM-D1	
C142	5000		23E4004-15	BPD-005	DD-502	KD80	ED-005	DC-525	5HK-D6	
C143	33		23E4001-31	1489-000033	TCZ-33	TZ26	TCO-33		5TCC-Q33	
C144	033	600	23E5403	BPD-03	DF-303	CUB5E33	GP-3300	GEM-6233	6TM-E33	
C145	022	400	23E5417	BPD-02	DP-203	CUB4G22	ED-02	GEM-4122	4TM-S22	
C146	15		23E4001-19							
C147	27		23E4001-36	N750-S13S	TCN-27	TN06	TCT-27		5TCU-Q25	
C148	130		23E4001-27							
C149	01	600	23E5410	DI-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C150	01	400	23E5410	DI-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C151	01	600	23E5410	DI-01	DE-103	CUB4S1	GP-10000	GEM-4141	4TM-S1	
C152	.1	600	23E5416	P488N-1	DF-104	CUB4P1		GEM-404	4TM-P1	
C153	2.5-7		24E718		E2S-E2		TS- A	GT-5515-2		
C154	.047	600	23E5404	BPD-05	DF-503	CUB6E47		GEM-6147	6TM-647	
C155	.047	600	23E5404	BPD-05	DF-503	CUB6E47		GEM-6147	6TM-647	
C156	5000		23E5033-35	BPD-005	DD-502	KD80	ED-005	DC-525	5HK-D6	Note 2
C157	33	600		P688N-23		CUB6P22		GEM-5033	5TM- P33	Note 3

Note 1. Used in UHF-VHF models only.
Note 2. Not used in some versions.

CONTROLS

ITEM No.	RATING RESIST ANCE	RATING WATTS	REPLACEMENT DATA SENTINEL PART No	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No	MALLORY PART No	INSTALLATION NOTES
R1A	500K		32E133			RTV-540		Brightness Control (Panel)
B	1Meg							Volume Control(Rear)
								Tap @ 50K and 40K
C	Switch		Not Req.		Not Req.			Switch on R1B
R2A	1Meg		26E145	F1-51		+QJ-1000	UF1E1	Vert. Hold (Panel)
B	10K			R2-23			UR3 4L	Horiz Hold (Rear)
R3A	1500		26E370	AB-8	A47-1500-B		U6	Green Horiz. Amp.
B	Shaft		Not Req.	AK-4	[redacted]		US	Not Req. Attach to R3A
R4A	1000		26E170					Green Vert. Tilt (Panel)
B	1000							Green Vert. Amp.(Rear)
R5A	1Meg		26E243		A42-1000	WPK-1000	RU000L	Green Screen (Panel)
B	500K							Green Background (Rear)
R6A	10000		26E143	AB-69	A47-1Meg-B	Q 11-137	U54	Vert. Lin. (Rear Wired)
B	1Meg		Not Req.	AK-4	K26-3		D5-36	Attach to R7A
R8A	1000		26E171-2					Red Vert. Tilt (Panel)
B	1000							Red Vert. Amp.(Rear)
R9A	1500		26E170-2	AB-8	A47-1500-B	QU-109	U6	Red Horiz. Amp.
B	Shaft		Not Req.	AK-4	[redacted]	Not Req.	D5-36	Attach to R9A
C	Coupler		Not Req.	Not Req.	Not Req.	Not Req.	C3	Not Req.
R10A	1Meg		26E168	B-69	A47-1Meg-B	QU-137	U54	Tone Control
B	Shaft		Not Req.	AK-4	P3-3	Not Req.	D5-36	Attach to R10A
R11A	500K		26E237	F1-3				Contrast Control (Panel)
								Tap @ 325Ω
B	3000Ω			R2-9				Croma Control (Rear)
R12A	1500Ω		26E170	AB-8	A47-1500-B		U6	Blue Horiz. Amp.
B	Shaft		Not Req.	AK-4	K26-3		D5-36	Attach to R12A
R13A	2000		26E171					Blue Vert. Tilt (Panel)
B	Shaft							Blue Vert. Amp. (Rear)
R14A	1Meg		26E142					Blue Screen (Panel)
B	500K							Blue Background (Rear)
R15A	5.5Meg		26E172	AB-83	A47-2.5Meg		U255	Vert. Size
B	Shaft		Not Req.	AK-4	[redacted]			Attach to R15A
R16A	1Meg		26E165					Color Gate (Panel)
B	500K							AGC Control(Rear)
	3R5 733							Vert. Centering (Wire wound)
R17A	3000	2	26E147	TCZ-18	TCO-18			Vert. Centering (Wire wound)
B	3000	2		5R5T47	ED-470		MS-347	Horiz Centering (Wire wound)
R18A	1000	2	26E148			GP-10000	GEM-611	Horiz. Centering (Wire wound)
B	1000	2					6TM-P1	Horiz. Drive
R19A	5000	2	26E249	AB-10	A47-5000-B	QU-114	U34	Attach to R19A
B	Shaft		Not Req.	AK-1	FX8-1, 4	Not Req.	U41	RS-voltage adjustment
R20A	100K	1	26E259	AB-60	A47-100K-B	QU-128	U41	Attach to R20A
B	Shaft		Not Req.	AK-1	FX8-1, 4	RQ	Not Req.	Focus Control
R21	5Meg		26E123					Brica Control (Wire wound)
R23	5000	2	26E123	39-500-100				
	With 1000 stop							

* Concentrikit Equivalent K-15, Base Elements & Shafts BU-118, BVT-934 (Panel)
BU-137, RU-108 (Rear)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING OHMS	RATING WATT	REPLACEMENT DATA SENTINEL PART No.	IRC PART No.	NOTES
R23	15K		27E223K-1	BTS-15K	
R24	47K		27E473K-1	BTS-47K	
R25	430K		27E643K-1	BTS-430K	
R26	470K		27E474M-1	BTS-470K	
R27	470Ω		27E471K-1	BTS-470	
R28	5800Ω		27E582K-1	BTS-5800	
R29	100K		27E104K-1	BTS-100K	
R30	100K		27E104K-1	BTS-100K	
R31	15K		27E153K-1	BTS-15K	
R32	33K		27E333K-1	BTS-33K	
R33	6200Ω		27E622K-1	BTS-6200	
R34	3300Ω		27E332K-1	BTS-3300	
R35	10K		27E103K-1	BTS-10K	
R36	10K	1	27E103K-1	BTA-10K	Note 3
R37	4700Ω		27E472K-1		
R38	470Ω		27E471K-1		
R39	8900Ω		27E892K-1		
R40	3700Ω	1	27E372K-1	BTA-3700	
R41	56Ω		27E560K-1	BTS-56	
R42	100Ω		27E761K-1		
R43	39K		27E393K-1		
R44	3700Ω		27E372K-1	BTA-3700	
R45	56Ω		27E560K-1	BTS-56	
R46	47K		27E473K-1		
R47	470Ω		27E471K-1		
R48	39K		27E393K-1		
R49	3700Ω	1	27E372K-1	BTA-3700	
R50	56Ω		27E560K-1	BTS-56	
R51	470Ω	2	27E471K-1	BTS-470	
R52	47K		27E473K-1		
R53	470Ω		27E471K-1		
R54	47K		27E473K-1		
R55	470Ω		27E471K-1	BTS-470	
R56	330Ω		27E331K-1	BTS-330	
R57	47K		27E473K-1		
R58	10K		27E103K-1		
R59	15K	2	27E153K-2	BTB-15K	
R60	3900Ω	2	27E392K-2	BTB-3900	
R61	47K		27E473K-1	BTS-47K	
R62	6500Ω	10	27E202-2		
R63	47Ω		27E470K-1	BTS-47	
R64	560Ω		27E561K-1	BTS-560	
R65	1000Ω		27E102K-1	BTS-1000	
R66	10Ω		27E010K-1	BTS-100	
R67	120K	1	27E124K-1	BTA-120K	
R68	220K		27E224M-1	BTS-220K	
R69	270K		27E274M-1	BTS-270K	
R70	130K		27E134K-1	BTS-130K	
R71	33K		27E333K-1	BTS-33K	
R72	56K		27E563K-1	BTS-56K	
R73	68K		27E683K-1	BTS-68K	
R74	1.2Meg 5%		27E125J-1	BTS-1.2Meg 5%	
R75	390K 5%		27E394J-1	BTS-390K	
R76	10Meg 5%		27E106J-1	BTS-10Meg [redacted]	
R77	10K		27E103K-1	BTS-10K	
R78	4700Ω 5%		27E472J-1	BTS-4700 5%	
R79	180K		27E184K-1	BTS-180K	
R80	56K		27E563K-1	BTS-56K	
R81	470K		27E474K-1	BTS-470K	
R82	22K 5%		27E223J-1	BTS-22K 5%	
R83	470K		27E474K-1	BTS-470K	
R84	100K 5%		27E104J-1	BTS-100K 5%	
R85	1.2Meg		27E125K-1	BTS-1.2Meg	
R86	470K		27E474K-1	BTS-470K	
R87	47K		27E473K-1	BTS-47K	
R88	47K		27E473K-1	BTS-47K	
R89	4.7Meg		27E475M-1	BTS-4.7Meg	
R90	220Ω		27E221K-1	BTS-220	
R91	1500Ω		27E153K-1	BTS-1500	
R92	33K	1	27E334M-1	BTS-330K	
R93	470K		27E474M-1	BTS-470K	
R94	4700Ω		27E472K-1	BTS-4700	
R95	3700Ω	1	27E372K-1	BTA-3700	
R96	3000Ω	10	27E162S-2	PW10-3000	
R97	33K		27E333K-1	BTS-33K	
R98	2200Ω		27E222K-1	BTS-2200	
R99	470K		27E474K-1	BTS-470K	
R100	5.7Meg		27E575F-1	BTS-5.7Meg	
R101	100K		27E104K-1	BTS-100K	
R102	47000Ω		27E473K-1	BTS-47K	
R103	39K		27E393K-1	BTS-39K	
R104	10K		27E103K-1	BTS-10K	
R105	1Meg	3	27E105K-1	BTS-1Meg	
R106	3900Ω		27E392K-1	BTS-3900	
R107	470Ω		27E471K-1	BTS-470	
R108	1Meg		27E105K-1	BTS-1Meg	
R109	1Meg		27E105K-1	BTS-1Meg	
R110	2.7Meg		27E275K-1	BTS-2.7Meg	
R111	1Meg		27E105K-1	BTS-1Meg	
R112	33K		27E333K-1	BTS-33K	
R113	39K	3	27E393K-2	BTB-39K	
R114	2.2Meg		27E225K-1	BTS-2.2Meg	
R115	390K		27E394K-1	BTS-390K	
R116	1000Ω		27E102K-1	BTS-1000	

RESISTORS (cont)

ITEM No	RATING OHMS	RATING WATT	REPLACEMENT DATA SENTINEL PART No	IRC PART No	NOTES
R120	1000Ω		27E102K-1		
R130	680K		27E684M-1	BTB-680K	
R131	4.7Meg		27E475M-1		
R132	270Ω		27E271K-1		
R133	120K 5%		27E234J-1		
R134	120K 5%		27E234J-1		
R135	470K		27E474K-1		
R136	5600Ω 5%	1	27E562J-1		
R137	10K		27E103J-1		
R138	18000 5%		27E183J-1		
R139	100K 5%		27E104J-1		
R140	4700Ω		27E472K-1		
R141	470K		27E474K-1		
R142	100Ω		27E101K-1		
R143	1000	10	27E102S-2	WPK-1000	RU000L
R144	2200	10	27E222S-2	WPK-2200	RU002L
R145	68000Ω		27E683K-1		
R146	330K		27E334K-1	BTA-4700	
R147	10K		27E103K-1	BTS-10K	
R148	10000Ω		27E203K-1	BTS-10000	
R149	10K		27E103K-1	BTS-10K	
R150	470K		27E474K-1	BTS-470K	
R151	470K		27E474K-1	BTS-470K	
R152	10K	1	27E203K-1	BTA-10K	
R153	10K		27E103K-1	BTS-10K	
R154	10000Ω		27E203K-1	BTS-10000	
R155	3.3Ω		27E3R3K-4	BWJ-3.3	
R159	3.3Ω		27E3R3K-4	BWJ-3.3	
R157	22K	2	27E223K-2	BTB-22K	Note 1
R158	22K	2	27E223K-2	BTB-22K	Note 1
R159	22K	2	27E223K-2	BTB-22K	Note 1
R160	7Meg	3	27E207-6		
R161	18K		27E183J-1	BTS-18K	
R162	560Ω		27E561K-1	BTS-560	
R163	10K		27E103K-1	BTS-10K	
R164	10000Ω		27E203K-1	BTS-1000	
R165	120K 5%		27E234J-1	BTS-120K 5%	
R166	22Meg 5%		27E226J-1	BTS-22Meg 5%	
R167	2.2Meg 5%		27E225J-1	BTS-2.2Meg 5%	
R168	2.2Meg 5%		27E225J-1	BTS-2.2Meg 5%	
R169	20Meg 5%		27E206J-1	BTS-20Meg 5%	
R170	220K		27E224M-1	BTS-220K	
R171	560K		27E564M-1	BTS-560K	
R172	12K		27E123K-1	BTS-12K	
R173	68K	1	27E683K-1	BTA-68K	
R174	680Ω		27E681K-1	BTS-680	
R175	10000		27E103K-1	BTS-10000	
R176	15K	1	27E153K-1	BTA-15K	
R177	470Ω		27E471K-1	BTS-470	
R178	35000Ω	5	27E350S-1	1-3/4A-3500	
R179	1Meg 5%		27E105J-1	BTS-1Meg 5%	
R180	1Meg 5%		27E105J-1	BTS-1Meg 5%	
R181	2.2Meg		27E225K-1	BTB-2.2Meg	
R182	12KΩ	1	27E123K-1	BTA-120	
R183	5600Ω	3	27E562K-1	BTB-5600	
R184	12K 5%	2	27E123J-2	BTB-12K 5%	
R185	220K	3	27E224K-2	BTB-220K	
R186	33K 5%	2	27E333J-2	BTB-33K 5%	
R187	47K 5%	2	27E473J-2	BTB-47K 5%	
R188	33K	2	27E333K-2	BTB-33K	
R189	47K	2	27E473K-2	BTB-47K	
R190	22K	2	27E223K-2	BTB-22K	
R191	33K	2	27E333K-2	BTB-33K	
R192	47K	2	27E473K-2	BTB-47K	
R193	10K		27E103K-1	BTB-10K	
R194	12K 5%	2	27E123J-2	BTB-12K 5%	
R195	220K		27E224M-1	BTB-220K	
R196	470K		27E474K-1	BTB-470K	
R197	47K		27E473K-1	BTB-47K	
R198	47K		27E473K-1	BTB-47K	
R199	82K 5%	3	27E823J-1	BTB-82K 5%	
R200	82K 5%	3	27E823J-1	BTB-82K 5%	
R201	100K		27E104K-1	BTB-100K	
R202	27000 5%	3	27E273J-1	BTB-27000 5%	
R203	56000 5%	3	27E563J-1	BTB-56000 5%	
R204	27000 5%		27E273J-1	BTB-27000 5%	
R205	100K		27E104K-1	BTB-100K	
R206	470K		27E474K-1	BTB-470K	
R207	330K		27E334M-1	BTB-330K	
R208	47K		27E473K-1	BTB-47K	
R209	560K		27E564M-1	BTB-560K	
R210	47K		27E473K-1	BTB-47K	
R211	560K		27E564M-1	BTB-560K	
R212	100K		27E104K-1	BTB-100K	
R213	10K		27E103K-1	BTB-10K	
R214	56K		27E563K-1	BTB-56K	

Note 1. Part of M18 (EV connector).
Note 2. A 6800Ω @2W (Part #27E682K-2) used in models using UHF tuner.

TRANSFORMER (POWER)

ITEM No	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	SENTINEL PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
T1	117VAC	1680	6.3V @ 1A	10 @ 375Ω	22E110					
	& 3 35A	tap @ 165V	14 2A	1.8A						
		510A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	SENTINEL PART No	Halldorson PART No	Merit PART No	RCA TYPE No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Vert. Osc. Trans.	22E106	[redacted]	A-3003	209T1 ①	V405	A-B125	26A03	A-97X
T3	Horiz Output Trans.	22E104							
T4	Vert. Output Trans.	22EU4							
T5A	Yoke-Horiz. (DMH)	20EU1743 ②							
B	Vert. (DMH)								
T6	Horiz Lin Coil	22EU18							
	Width Coil(.35-2.3MH)	22E134	RJ804 ①	MWC-2	206BH ①	20U13A ②	WC-7 ①	WC-23	WC-19
T7	Width Coil(.35-2.3MH)	22E134	RJ804 ①	MWC-2	206BH ①	20U13A ②	WC-7 ①	WC-23	WC-19
T8	Horiz. AFC Pulse								
	Trans.	20EU16							
T9	Vert. Centering Choke	22EJ07							
T10	Horiz. Centering Choke	22EU17							
T11	Horiz. Centering Choke (4-18MH)	20EU15	RJ800 ③	MWC-11 ④	215BU ① ③	20U18 ② ③	WC-5 ③	WC-18 ③	WC-13 ① ③
T12	Vert. Convergence Choke	22EU13							
T13	Green Horiz. Tilt Coil	20EU20		MWC-3	216BU ①				WC-19
T14	Blue Horiz. Tilt Coil	20EU20		MWC-3	216BU ①				WC-19
T15	Red Horiz. Tilt Coil	20EU20		MWC-3	216BU ①				WC-19
T16A	Green Dynamic Con-	20EJ09							
B	Red vergence	P1083 ①							
C	Blue Yoke Assy.								

① Drill new mounting hole(s).
② Includes capacitor C118, resistors R126 and R129
③ Adjust to maximum inductance.
④ Use terminals #1 and #2
⑤ Use red and blue terminals
⑥ Enlarge mounting hole.
⑦ Magnet only (Part of convergence yoke assembly).

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	IMPEDANCE SEC.	SENTINEL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T7	6K	3-4Ω	22EJ03	21006 ①	A-2938 ①	A-3830	32B58	S-5X	① Drill one new mounting hole

SPEAKER

ITEM No	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	SENTINEL PART No.	OHAM PART No.	RCA TYPE No	NOTES
SP1	10"	PM	3-4Ω	1E43-8	10AX8	215BU	
SP3	5"	PM	3-4Ω	1E58-3	5AX7	205S2	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	SENTINEL PART No.	NOTES
L1A	Ant. Coil	31M-012-2UC	Channel 2
B	Ant. Coil	31M-012-3UC	Channel 3
C	Ant. Coil	31M-012-4UC	Channel 4
D	Ant. Coil	31M-012-5UC	Channel 5
E	Ant. Coil	31M-012-6UC	Channel 6
F	Ant. Coil	31M-012-7UC	Channel 7
G	Ant. Coil	31M-012-8UC	Channel 8
H	Ant. Coil	31M-012-9UC	Channel 9
I	Ant. Coil	31M-012-10UC	Channel 10
J	Ant. Coil	31M-012-11UC	Channel 11
K	Ant. Coil	31M-012-12UC	Channel 12
L	Ant. Coil	31M-012-13UC	Channel 13
L2	Neut. Coil	31B-727	
L3A	RF, Mixer Grid, Osc. Coils	31M-112-1UC	Channel 2
B	RF, Mixer Grid, Osc. Coils	31M-112-2UC	Channel 3
C	RF, Mixer Grid, Osc. Coils	31M-112-3UC	Channel 4
L3D	RF, Mixer Grid, Osc. Coils	31M-112-5UC	Channel 5
E	RF, Mixer Grid, Osc. Coils	31M-112-6UC	Channel 6
F	RF, Mixer Grid, Osc. Coils	31M-112-7UC	Channel 7
G	RF, Mixer Grid, Osc. Coils	31M-112-8UC	Channel 8
H	RF, Mixer Grid, Osc. Coils	31M-112-9UC	Channel 9
I	RF, Mixer Grid, Osc. Coils	31M-112-10UC	Channel 10
J	RF, Mixer Grid, Osc. Coils	31M-112-11UC	Channel 11
K	RF, Mixer Grid, Osc. Coils	31M-112-12UC	Channel 12
L	RF, Mixer Grid, Osc. Coils	31M-112-13UC	Channel 13
L4	Fil. Choke	34A-704	
L5	Conv. Plate	31K-964	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L6	1st. Video IF	.3ΩCT		20E1085				Tapped
L7	41.25MC Trap	0Ω		20E1084				Tapped
L8	47.25MC Trap	0Ω		20E1083			4604	1.4 Microhenries
L9	Fil. Choke	0Ω		20E1092	19-1001		6219	
L10	2nd. Video IF	.1Ω	.1Ω	20E1080	17-4524	TV-130	4604	1.4 Microhenries
L11	Fil. Choke	0Ω		20E1092	19-1001		6219	
L12	3rd. Video IF	.1Ω	.1Ω	20E1081		TV-130	4604	1.4 Microhenries
L13	Fil. Choke	0Ω		20E1092	19-1001		4604	1.4 Microhenries
L14	Fil. Choke	0Ω		20E1092	19-1001		4604	1.4 Microhenries
L15	4th. Video IF	.1Ω	.1Ω	20E1168	17-4524	TV-130	6219	
L16	Fil. Choke	0Ω		20E1092	19-1001		4604	1.4 Microhenries
L17	RF Choke	2.2Ω		20E1086				7.3 Microhenries
L18	Luminance Detector	.3Ω	.1Ω	20E1219				Tertiary winding -.2Ω
L19	Luminance Det. Coupling Coil	.1Ω		20E1220				Tapped
L20	41.25MC Trap	0Ω		20E1089				Tapped
L21	Series Peaking Coil	10Ω		20E363-12	19-4201 ■		6154 ■	210 Microhenries, wound on 15K resistor
L22	Adj. Series Peaking Coil	10.3Ω		20E1108				
L23	4.5MC Trap	.8ΩCT		20E1109				
L24	Shunt Peaking Coil	10Ω		20E363-23	19-3250	TV-185	6181	260 Microhenries
L25A	Series Peaking Coil	9Ω						588 Microhenries
B	Shunt Peaking Coil	7.5Ω		20E1245				505 Microhenries
L26	Shunt Peaking Coil	19Ω		20E363-26			6156	800 Microhenries
L27	RF Choke	2.2Ω		20E1086				7.3 Microhenries
L28	Series Peaking Coil	.9Ω		20E1087	19-1004		4610	5.8 Microhenries
L29A	4.5MC Trap	.9ΩCT		20E1221				
B	1st. Sound IF	2.6Ω						
L30	2nd. Sound IF	4.5Ω		20E1088	20-1004		1480	
L31	3rd. Sound IF	.6Ω	.6Ω	20E1242				
L32	Quadrature Coil	5Ω		20E1037			1470	
L33A	4.5MC Trap	5Ω		20E1091				
B	4.1MC Trap	.9Ω						
L34	Shunt Peaking Coil	27Ω		20E363-6			4642	1070 Microhenries
L35	Chroma Inter-stage Transformer	5Ω	1.8Ω	20E1103				
L36	2nd. Chroma Amp. Plate Coil	15Ω		20E1110				
L37	7.2MC Trap	3Ω		20E1140				
L38	Burst Take-off Coil	1.6ΩCT		20E1112				
L39	Series Peaking Coil	3.5Ω		20E363-27	19-3036	TV-180	6176	40 Microhenries
L40	Shunt Peaking Coil	27Ω		20E363-6				1070 Microhenries
L41	Chroma Reference Osc. Plate Coil	3.6Ω *		20E1105				* Tapped @ .6Ω tertiary winding -.4Ω & .8Ω
L42	Phase Shift Coil	1.1ΩCT		20E1115				
L43	Demodulator Drived Transformer	3Ω	3.1Ω ▲	20E1104				▲ Tapped @ 2.3Ω
L44	Series Peaking Coil	15Ω		20E1111			4612	1040 Microhenries
L45	Series Peaking Coil	15Ω		20E1111			4612	1040 Microhenries
L46	Series Peaking Coil	15Ω		20E1111			4612	1040 Microhenries

■ Parallel with 15K resistor.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L47	97Ω		20E831	19-1576	TV-163	6210			HS-5	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SENTINEL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L48	.110A	35Ω	1.2 HY	22E109	C5040 ①	C-2974	C-2327①	26C41 ①	C-21X
L49	.400A	35Ω	1.1 HY	22E109					

① Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SENTINEL PART No.	REPLACEMENT DATA
K1	Vertical Integrator	22K, 8200Ω, 8200Ω, 2000MMF, 5000MMF, 5000MMF	23E2023-5	Aerovox PA-110 Centralab PC-100 Cornell-Dublier 115TM1 Erie 1405-01 Sprague V-1

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	SENTINEL PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.510A	57E16-3C		9RS600SL	9S750		609	
M2	.400A	57E16-2C		9RS500SL	8S500		509	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SENTINEL PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3			#26 Wire 2½" Long					
M4			#26 Wire 2½" Long					
M5	3AG S/B P/T	5A 125V	40E7-7		315005. (3AG S/B P/T 5A)		MDV 5	
M6	3AG S/B P/T	½A 125V	40E7-8		315.500 (3AG S/B P/T ½A)		MDV½	

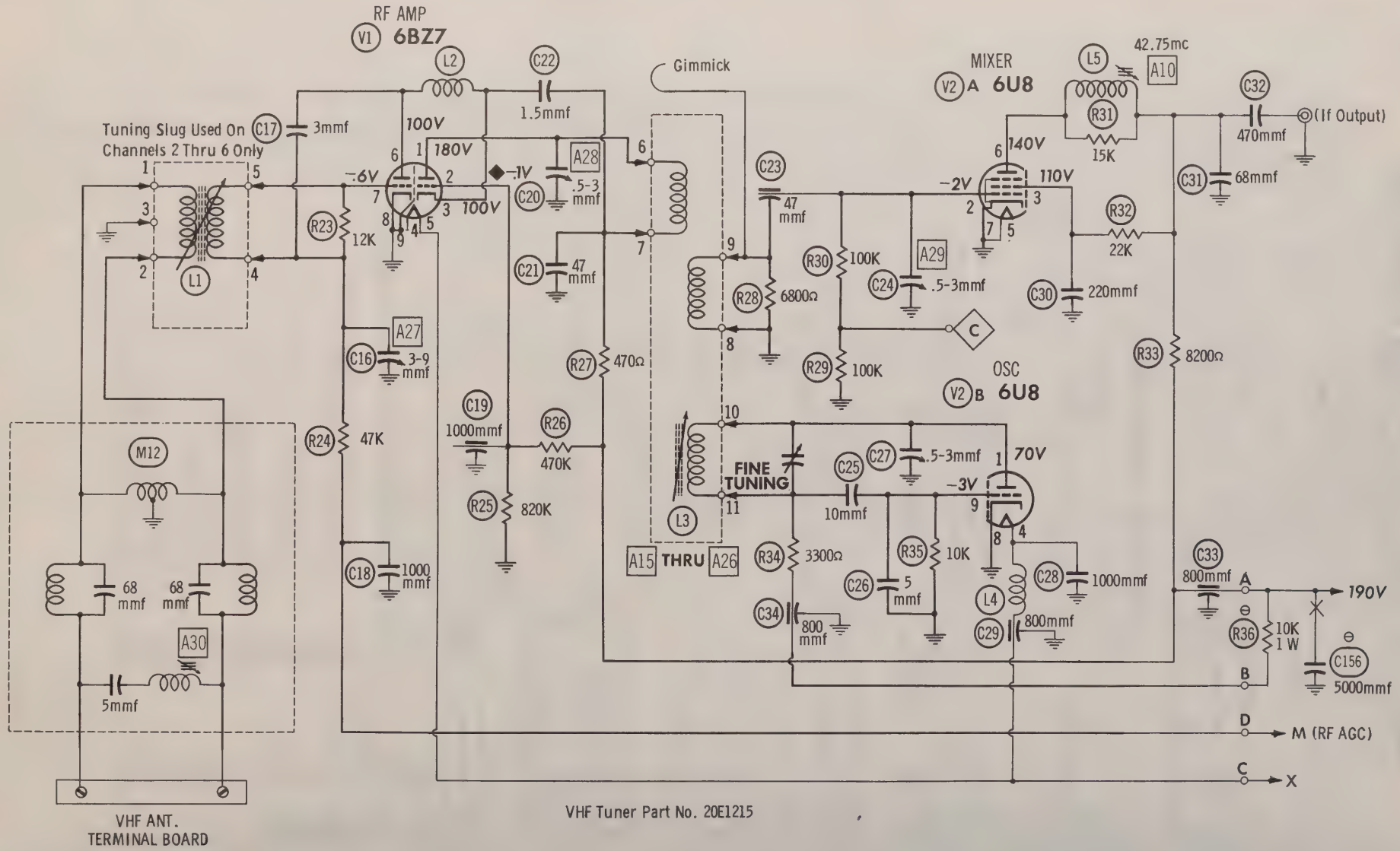
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		SENTINEL PART No.	SYLVANIA PART No.	
M7	1N295		1N60	Chroma-Sound Det. (Pigtail) Note 1
M8	1N295		1N60	Video Det. (Pigtail) Note 1
M9	1N67	95E4	1N355	Bias Clamper (Pigtail)

Note 1. CK-706A used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M10	Lamp		#44
M11	Tuner	20E1215	VHF
	Tuner	20E1079	VHF
	Tuner	20E1290	UHF-VHF Combination
M12	Trap	31K-225-02	Antenna input-Includes 5MMF, 68MMF, 68MMF fixed caps.
M13	Delay Line	20E1119	
M14	Reference Osc. Coil Assy.	20E1114	Includes 3.579545MC crystal (Sentinel Part #95E3-2.
M15	HV Connector	20E1197	(Male)Includes resistors R157, R158, R159
M16	Magnet	62E10	Purity
M17	Magnet	62E11	Blue Beam Positioning
M18	Magnet	P1081	Edge Purifying (8 used)
M19	Variable Cap.	24E69	Hue Adj. (5-25MMF)
M20	Trimmer Cap.	24E71	50-380MMF
	Safety Glass	9E45-16	
	Mask	36E106	Includes rubber gasket
	Knob	37E89	Fine tuning -VHF models
	Knob	37E90-5	Channel selector - VHF models
	Knob	37E113	Hue and tone
	Knob	37E113-2	Horiz. Hold and chroma
	Knob	37E114	Vert. Hold and contrast
	Knob	37E86-5	Brightness
	Knob	37E85-7	On-off- volume
	Knob Assy.	20E1289	Fine tuning - UHF-VHF models
	Knob	37E109	VHF channel selector - UHF-VHF models
	Knob	37E108	UHF channel selector - UHF-VHF models



VHF Tuner Part No. 20E1215

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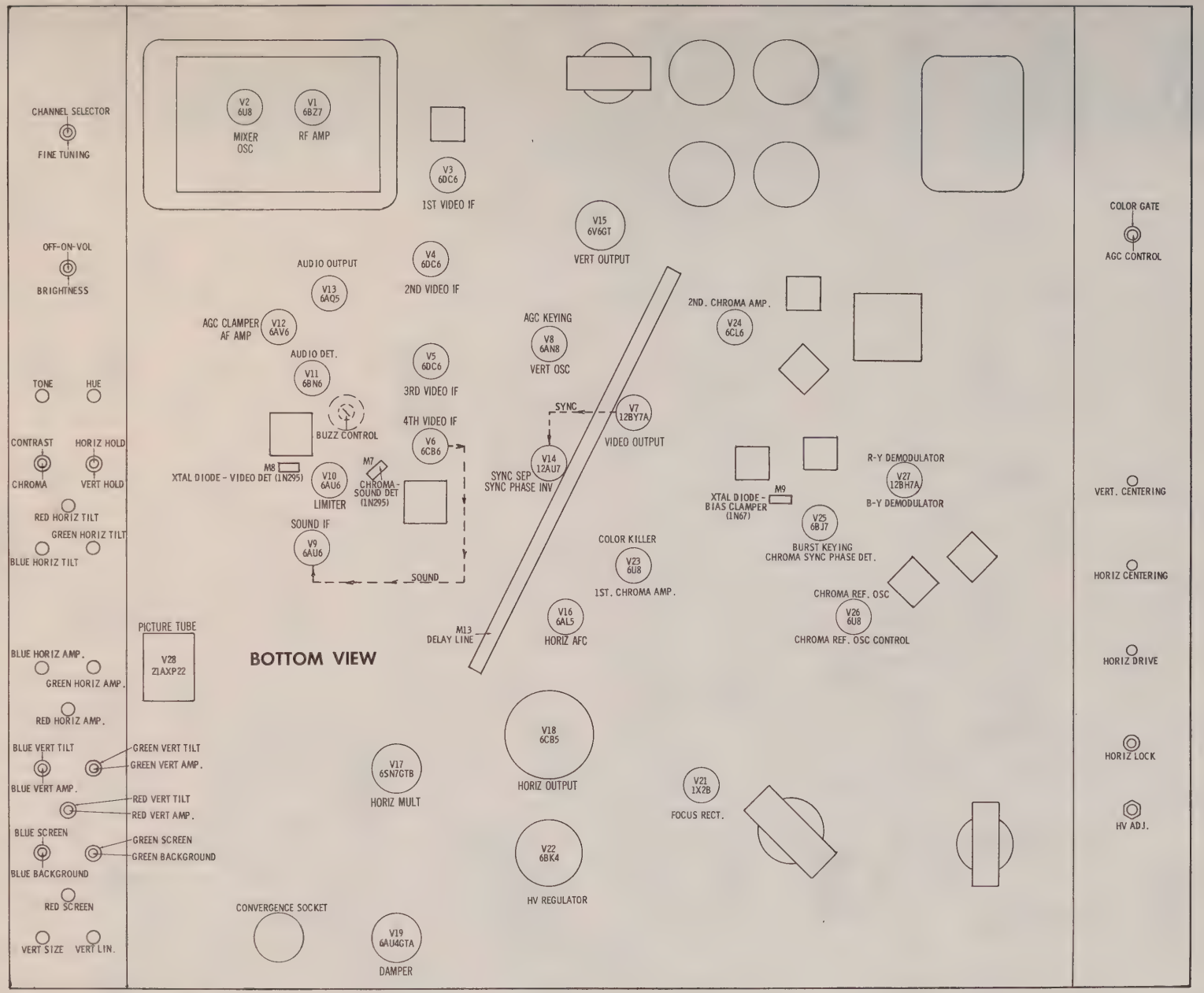
TUNER SCHEMATIC

RESISTANCE MEASUREMENTS

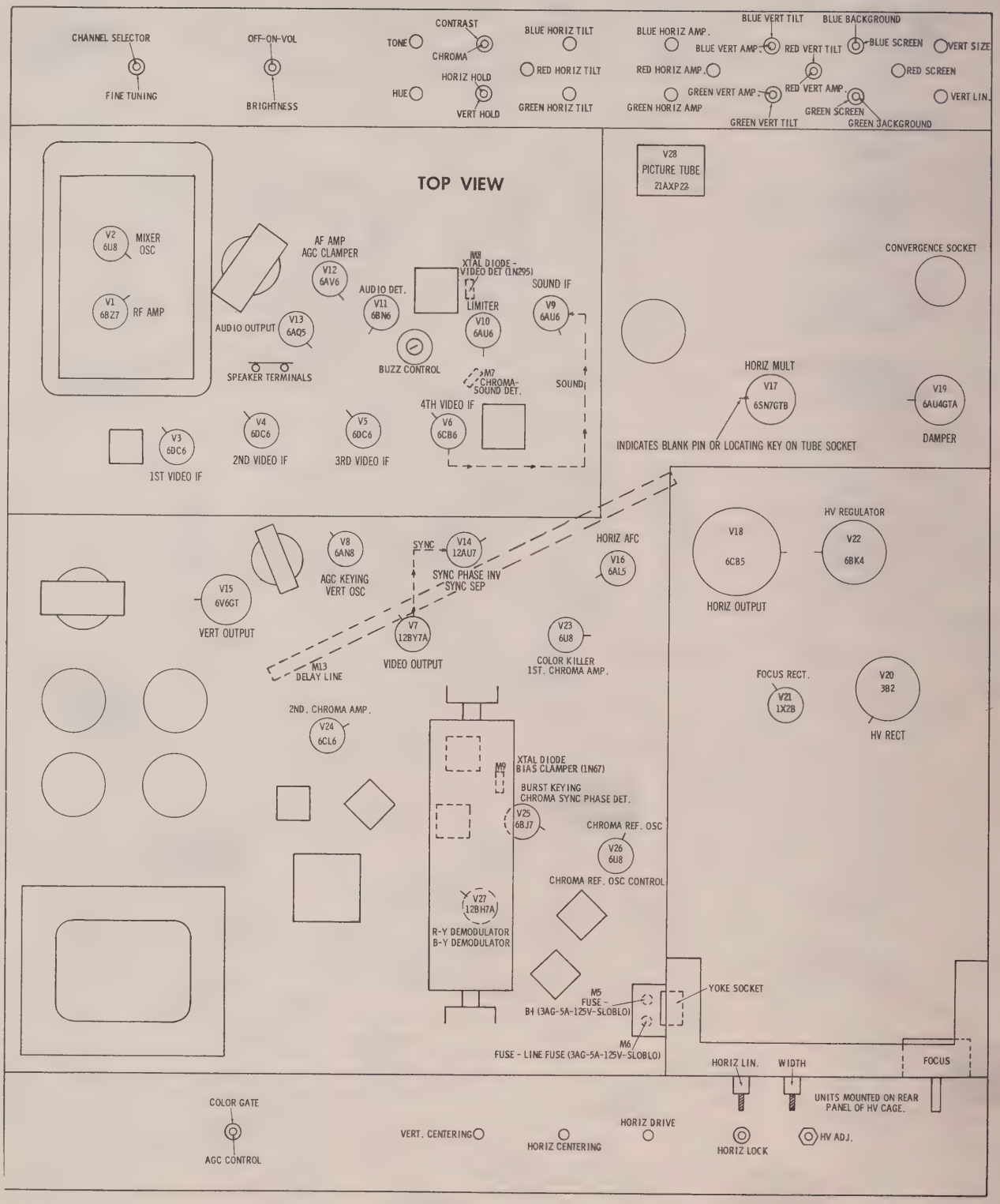
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ7	§ 505Ω	270K	INF	0Ω	.1Ω	INF	1.4Meg	0Ω	0Ω
V2	6U8	§13.5K	200K	§ 30K	.1Ω	0Ω	8500Ω	0Ω	0Ω	10K
V3	6DC6	94K	56Ω	0Ω	.1Ω	§ 3300Ω	§ 3300Ω	0Ω		
V4	6DC6	94K	56Ω	0Ω	.1Ω	§ 3300Ω	§ 3300Ω	0Ω		
V5	6DC6	47K	56Ω	0Ω	.1Ω	§ 2700Ω	§ 2700Ω	0Ω		
V6	6CB6	0Ω	330Ω	0Ω	.1Ω	§ 505Ω	§ 505Ω	0Ω		
V7	12BY7	147Ω	4100Ω	0Ω •	.1Ω	.1Ω	0Ω	§ 5600Ω	§ 3900Ω	0Ω
V8	6AN8	*2.5Meg	1.4Meg	220Ω	0Ω	.1Ω	420K	†10K	§ 40K	§4700Ω
V9	6AU6	100K	0Ω	0Ω	.1Ω	§ 33K	§ 33K	0Ω		
V10	6AU6	47K	0Ω	0Ω	.1Ω	§ 16K	§ 16K	0Ω		
V11	6BN6	340Ω	.5Ω	.1Ω	0Ω	§ 33K	5Ω	§ 450K		
V12	6AV6	4.7Meg	220Ω	.1Ω	0Ω	1.4Meg	1.4Meg	§ 330K		
V13	6AQ5	470K	270Ω	.1Ω	0Ω	†3400Ω	†3000Ω	470K		
V14	12AU7	§ 4700Ω	1Meg	4000Ω	0Ω	0Ω	§ 73K	2.7Meg	0Ω	.1Ω
V15	6V6GT	NC	0Ω	†2700Ω	†2500Ω	2.2Meg	NC	.1Ω	800Ω	
V16	6AL5	6200Ω	6200Ω	.1Ω	0Ω	4.7Meg	0Ω	4.7Meg		
V17	6SN7GT	5Meg	†10K	1800Ω	100K	†130K	1800Ω	.1Ω	0Ω	
V18	6CB5	NC	.1Ω	0Ω	TP	470K	NC	0Ω	†12K	TOP CAP *5Ω
V19	6AU4GTA	NC	NC	330K	NC	†40Ω	NC	.1Ω	0Ω	
V20	3B2		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP *52IΩ
V21	1X2B	12Meg	NC	12Meg	12Meg	12Meg	12Meg	TP	12Meg	12Meg
V22	6BK4	†1000Ω	§ 100K	NC	NC	*360K	NC	§ 100K	NC	TOP CAP INF
V23	6U8	§ 68K	380K	§ 10.5K	.1Ω	0Ω	§ 560Ω	0Ω	0Ω	3.3Meg
V24	6CL6	0Ω	400Ω	†20K	0Ω	.1Ω	†4000Ω	0Ω	†20K	400Ω
V25	6BJ7	2.2Meg	1.6Ω	TP	.1Ω	0Ω	1.6Ω	220Ω	2.2Meg	1.6Ω
V26	6U8	§ 560Ω	100K	§ 10.5K	.1Ω	0Ω	§ 560Ω	0Ω	2700Ω	1.7Meg
V27	12BH7	†40K	17K	6500Ω	0Ω	0Ω	†22K	17K	6500Ω	.1Ω
V28	21AXP22	§ 100K	§ 100K	*420K	§ 47K	§ 47K	80K	†470K	PIN 9 10Meg	PIN 11 †470K
		PIN 12 †150K	PIN 13 § 47K	PIN 14 § 100K						

† MEASURED FROM POSITIVE SIDE OF C1.
§ MEASURED FROM POSITIVE SIDE OF C2.
* MEASURED FROM PIN 3 OF V19.

TUBE PLACEMENT CHART



TUBE PLACEMENT CHART



RETMA MEMBER

TRUETONE
MODELS D3603A, D3604A

L. V. [illegible]
[illegible] MEADE ST.
DENVER, COLORADO

TRUETONE
MODELS D3603A, D3604A

TRUETONE
MODELS D3603A, D3604A

TRADE NAME	Truetone Models D3603A, D3604A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	105-125 Volts AC-DC (or) 3 Volts "A" Supply & 90 Volts "B" Supply
RATING	.15 Amp. @ 117 Volts AC (or) 150MA @ 3 Volts DC & 7.5MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535KC - 1630KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna lug on tuning gang. Low side to B-.	455KC (400∿Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	1630KC	"	"	A4	"
3.	"	"	535KC	Tuning gang fully closed	"	A5	"
4.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D3603A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det. -AVC-AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	150	EC-32	AFH3-09	CO080	FP210	TMT-8	T-040	R2312 *
B	■40	150				TC48			
C	20	150							
C2	70	15	EC-6	PRS15V100	BBR100-15		TD-100-15		TVA-1160

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	220		CC-33	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	Note 1
C4	10000		CC-4	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C5	100		CC-5	NP0-SI100	D6-101	TZ30	801-101	ZT-531	5TCC-T1	
C6	10000		CC-4	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C7	10000		CC-4	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C8	1500		CC-20	SI1500	D6-152	TP54	GP2L-152	UC-5215	5GA-D15	
C9	.1	200	PC-3	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C10	.047	400	PC-5	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C11	.1	400	PC-8	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C12	220		CC-33	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1.5Meg	½	VC-47					Volume & switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

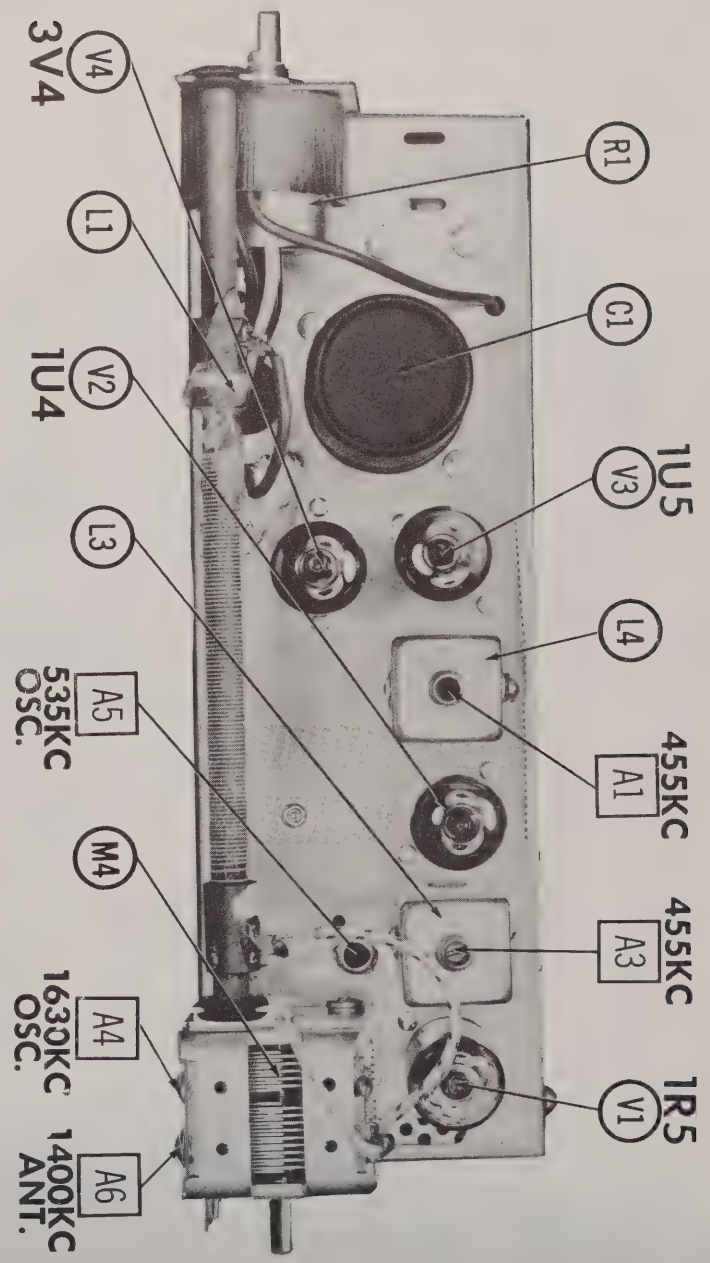
ITEM No.	RATING OHMS	RATING WATT	TRUETONE PART No.	IRC PART No.	NOTES
R2	1Meg			BTS-1Meg	Note 1
R3	15K		IR-63	BTS-15K	
R4	100K		IR-43	BTS-100K	
R5	3.3Meg		IR-23	BTS-3.3Meg	
R6	10Meg		IR-3	BTS-10Meg	
R7	470Ω		IR-1	BTS-470	
R8	2.2Meg		IR-13	BTS-2.2Meg	
R9	33Ω		IR-17	BTS-33	
R10	270Ω		IR-33	BTS-270	
R11	620Ω 5%		IR-39	BTS-620 5%	
R12	220K		IR-20	BTS-220K	
R13	620Ω 5%		IR-39	BTS-620 5%	
R14	2200Ω	1	IR-25	BTA-2200	
R15A	1050Ω	10	WR-7	1 3/4A-2000	
B	1050Ω	10			
R16	47Ω	1	IR-41	BTA-47	
R17	33Ω		IR-17	BTS-33	
R18	220K		IR-20	BTS-220K	

Note 1. Not used in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1050Ω	3-4Ω	Part of Spkr.	Z1117 ①	A-2998	A-3329	24S49	S-11X	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	RCA TYPE No.	
SP1	4"	PM	3-4Ω	SPK-29	4A07	223S1	

COILS (RF-IF)

ITEM No.	USE	DC-RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	1.9Ω		LL-30				
L2	Osc. Coil	1Ω	8.5Ω	LO-18			71-OSC	
L3	Input IF	30Ω	30Ω	LI-10	16-6780	BC-356	13-PC1	
L4	Output IF	40Ω	40Ω	LI-11		BC-357		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K1	Audio Circuit	2000MMF, 150MMF, 10000MMF, 150MMF, 5000MMF, 10Meg, 4.7Meg, 3.3Meg, 1Meg	MC-18	Aerovox Centralab Sprague	PA-521 PC-165 DP-1

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.075A	SR-2	1003A	RS075	6S75	5M4	75	

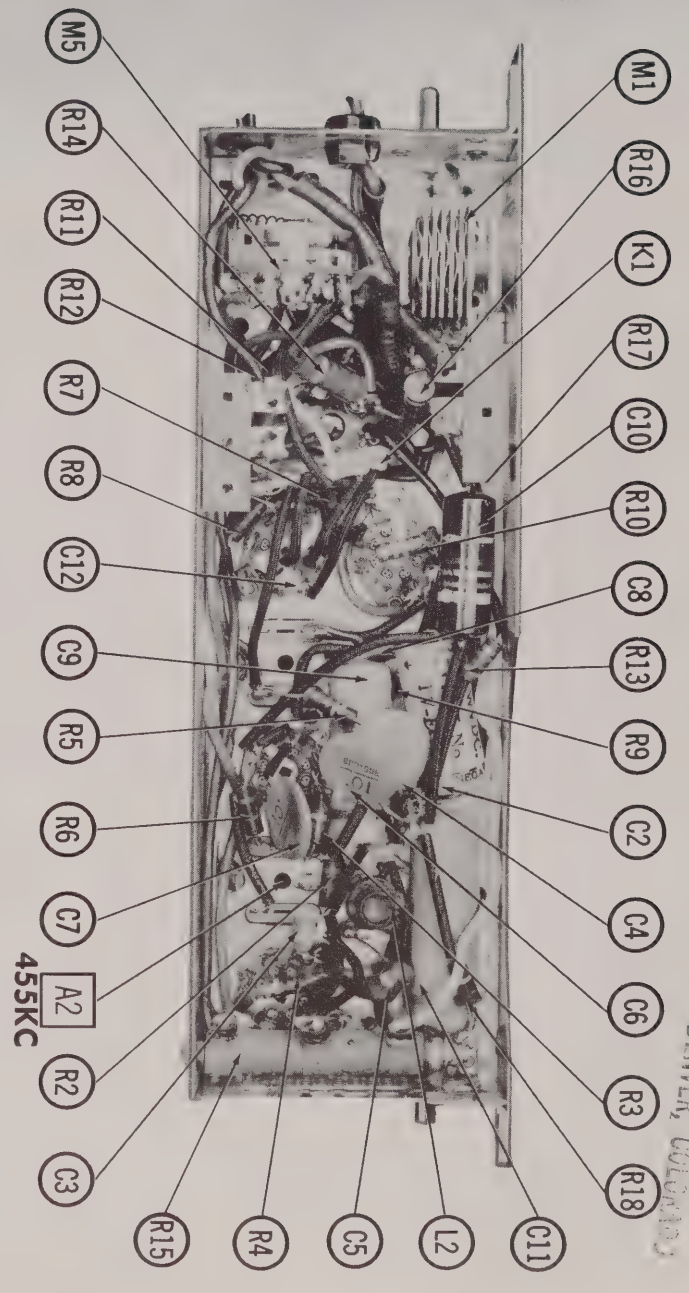
BATTERIES

ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	1.5V "A"		964			2IR			Connect 2 in series
M3	45V "B"			455			XX30		Connect 2 in series

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Tuning Cap.	GC-12	2 Gang (13-240MMF, 13-110MMF)
M5	Switch	SW-18	Power Changeover (6 pole - 2 position, rotary, wafer type)
	Cabinet	CA-155	
	Knob	K-153	On-off-volume
	Knob	K-154	Tuning

CHASSIS—BOTTOM VIEW



TRUETONE MODEL D3603A

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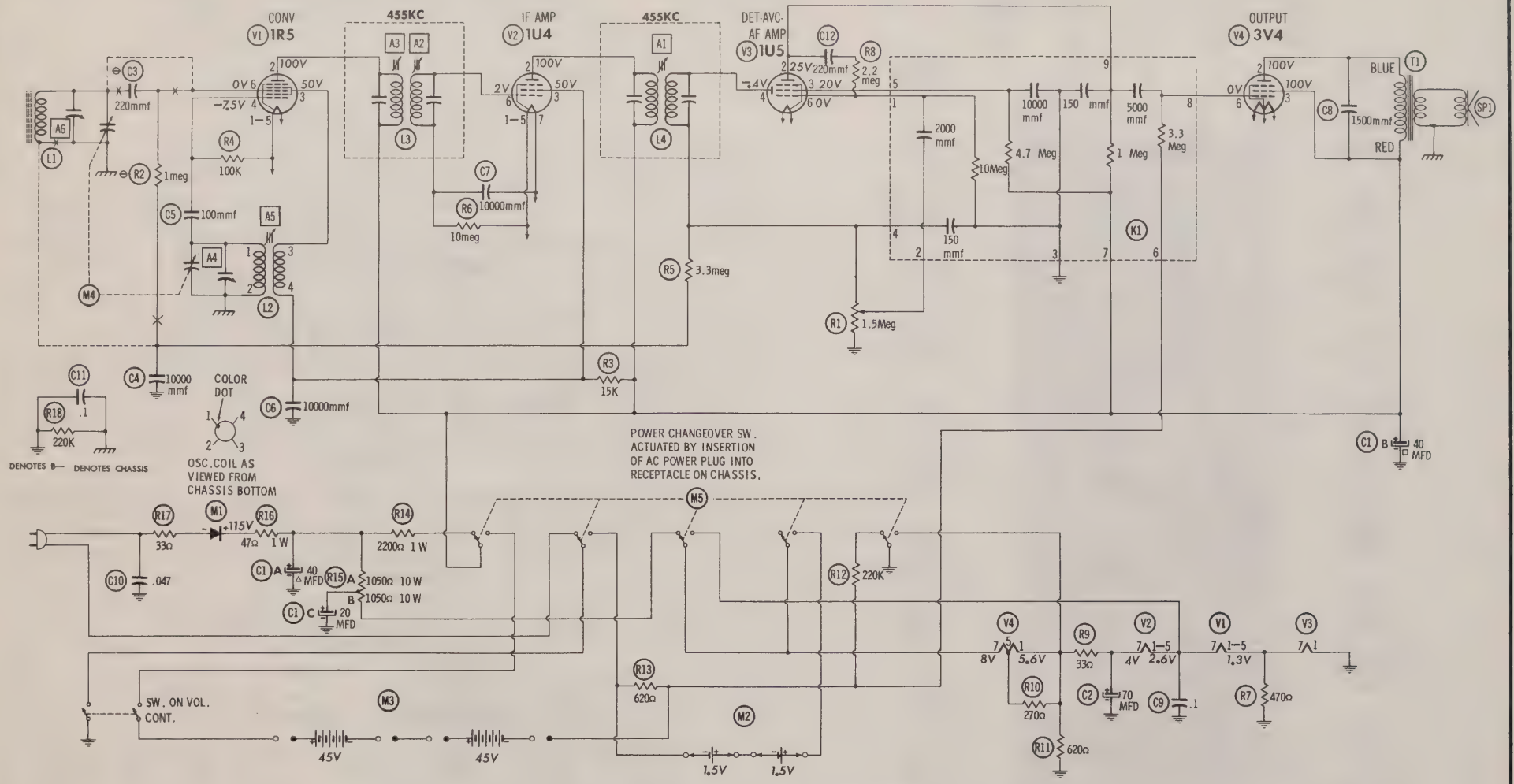
TRUETONE MODEL D3603A



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	•	†2200Ω	†17K	100K	•	5.8Meg	•
V2	1U4	•	†2200Ω	†17K	TP	•	10Meg	•
V3	1U5	•	†1Meg	†4.7Meg	1.5 Meg	TP	10Meg	•
V4	3V4	•	†2600Ω	†2200Ω	NC	•	3.5 Meg	•

• DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
TP TIE POINT
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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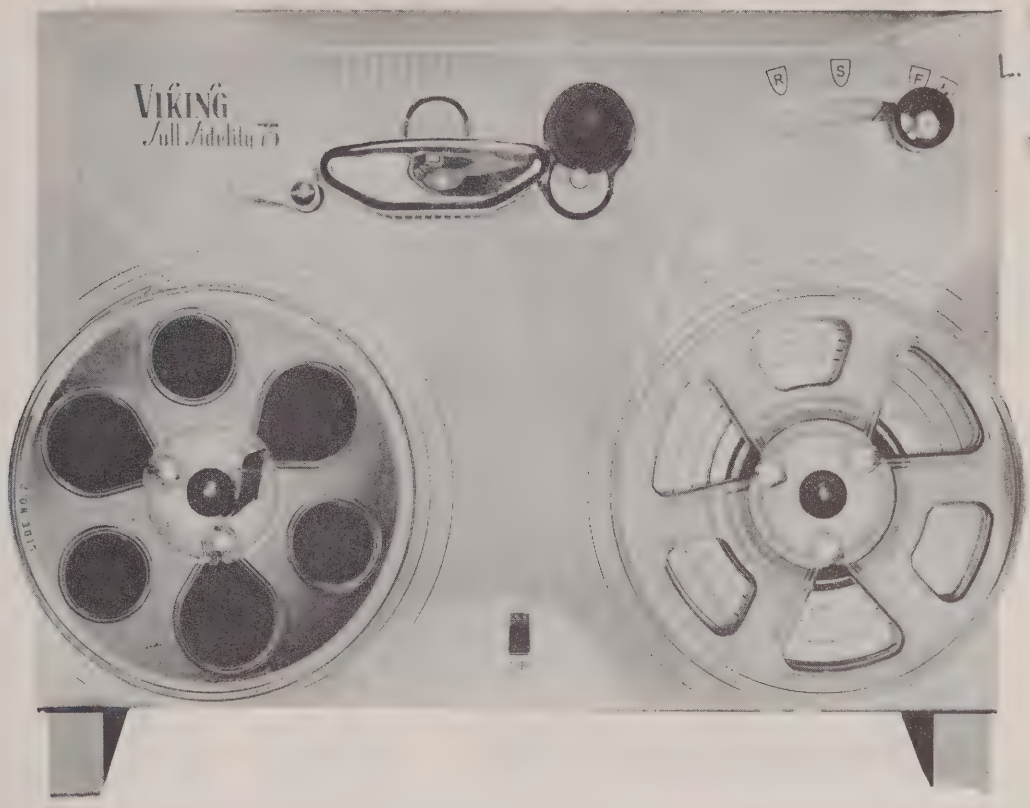

VIKING
MODEL FF75 Series

GENERAL INFORMATION

The Viking FF75 Series tape transport mechanism consist of the following types: FF75 covers basic mechanism, FF75R indicates erase-record heads supplied, FF75RM indicates erase and record-monitor operation (3 heads), FF75S indicates stacked stereophonic heads, FF75SU indicates stacked and staggered stereophonic heads, FF75SR indicates stereophonic head plus monaural erase-record heads, L suffix indicates tapelifter accessory and LP suffix indicates tapelifter and pressure pad accessory.

The Viking FF75 Series can be used with the Viking RP61 Record-Playback amplifier for professional quality playback, recording and duplicating, or used with the PB60 Preamplifier, for playback of recorded tape. These amplifiers are covered in this manual.

These recorders have two tape speeds, 7 1/2" and 3 3/4" per second. Using both tracks of the tape, the recording time is as follows:

Reel Size	3 3/4" Speed	7 1/2" Speed
5" (600 ft.)	1 hour	1/2 hour
7" (1200 ft.)	2 hours	1 hour

FF75 Series is designed to operate on 60 cycle, 105-125 volts, AC supply only.

Manufactured by:

Viking of Minneapolis
3520 East 43rd Street
Minneapolis 6, Minnesota

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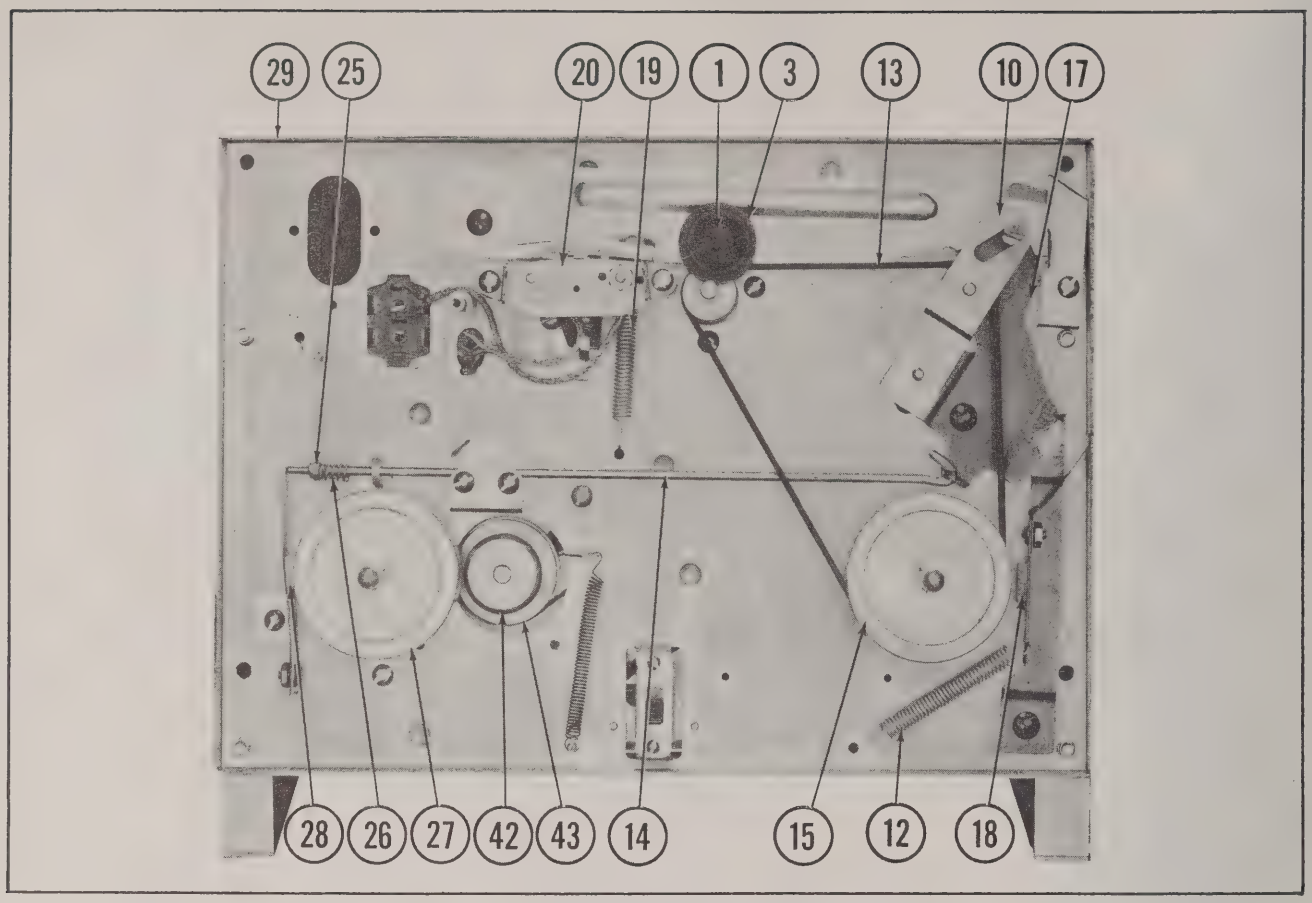


FIGURE 1

SPECIFICATIONS

Power Requirement: 110-volts, AC, 60 watts.

Tape Speed: 7-1/2 ips. (3 3/4" ips speed is available by changing belt to smaller groove on motor pulley. Not recommended for reproduction of frequencies higher than 7500 cps.)

Frequency Response: 50 to 15,000 cps plus at 7-1/2 ips tape speed.

Signal-To-Noise Ratio: 45 db or better. (This characteristic can be adversely affected by location of transformer or other sources of strong magnetic fields within 12 inches of the playback head or heads.)

Flutter: 0.3 per cent or less.

Weight: 11 pounds.

Record Head Characteristics:

Track width	—	0.009 in.
Gap width	—	0.0015 in.
D-C resistance	—	300 ohms
Inductance	—	290 mh at 1kc

Erase Head (if used):

Track width	—	0.125
Gap width	—	0.008
DC resistance	—	125 ohms
Inductance	—	30 mh
Impedance	—	10K at 30 kc 39K at 100 kc

OPERATING INSTRUCTIONS

1. Plug in the AC cord at a 110 volt, 60 cycle receptacle.

2. Place the Tape Motion Control in the "S" stop position.

3. Turn the AC switch on.

Threading The Tape-

1. Place a reel of tape on the left reel plate (27) and an empty reel on the right reel plate (15) making sure the reel slots engage the pins on the reel plates.

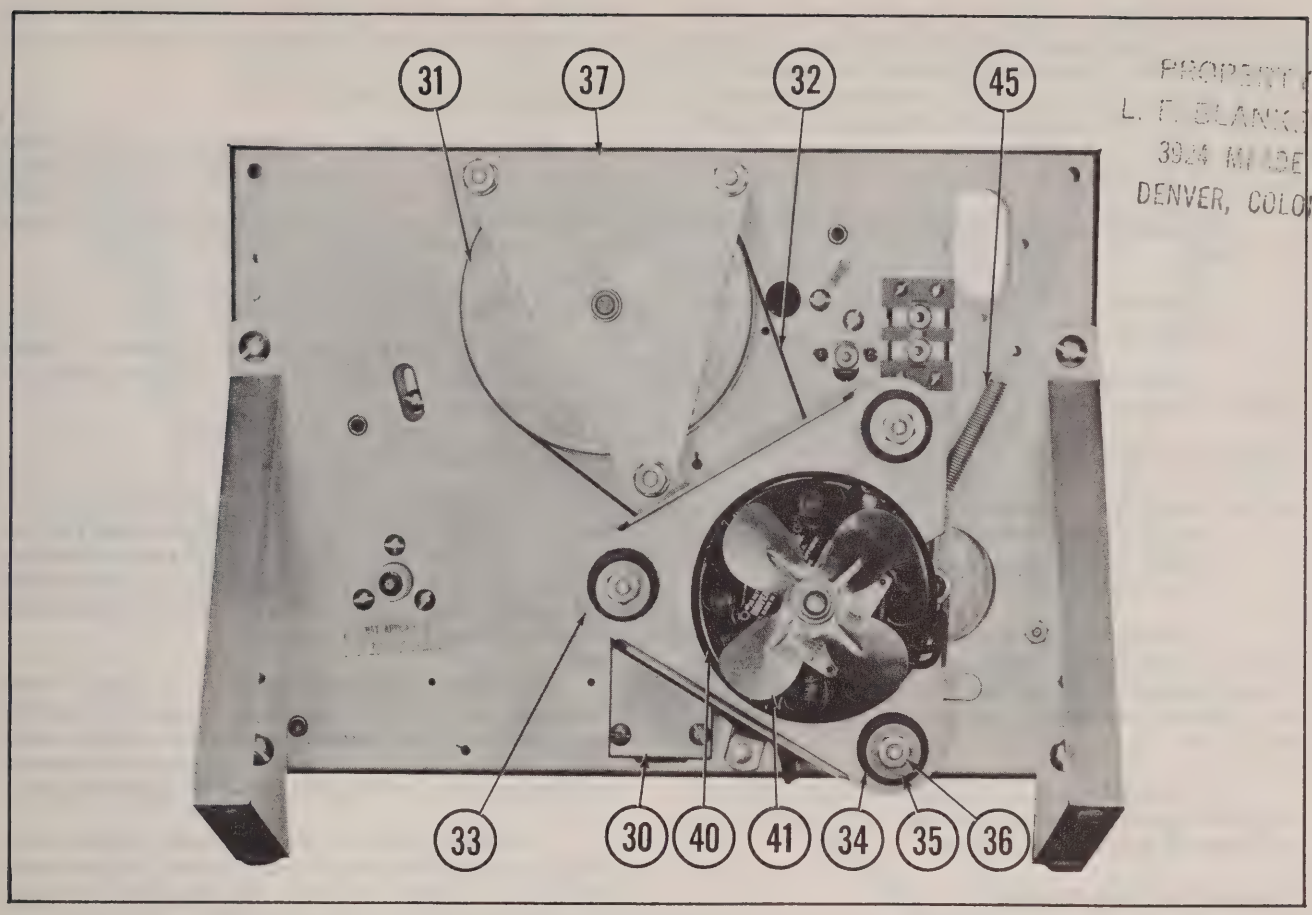
2. Unwind about 10" of tape from the reel. Hold a section of the tape straight with both hands and insert the tape in the tape slot making sure the dull coated side face in toward the head.

NOTE: This recorder uses Type "A" wound tape, i.e. the dull magnetic coated side faces inward on the reel. If the tape used is Type "B" (coated side facing outward) the recording will be made at a very low sound level and the playback will be almost inaudible.

3. Insert the free end of the tape into one of the three radial slots in the hub of the empty reel. Turn the reel several turns, counterclockwise, until the tape is secured to the reel and all slack is taken up between reels.

To Record From Microphone-

1. Turn the On-Off control clockwise on the



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DENVER, COLORADO

FIGURE 2

amplifier used, and allow about thirty seconds for the tubes to warm up.

2. Insert the microphone plug into the "Mike" jack.

3. Place the Play-Record switch in the record position.

4. Move the Tape Motion Control to the "F" (forward) position.

5. Hold the microphone about six inches from your mouth and speak in a normal voice. Adjusting the "Volume" control causes the electronic eye indicator to respond. Check to be sure that the maximum peaks do not cause the eye to close entirely. This will avoid saturation or overloading of the tape with consequent distortion. Good recording is obtained when the electronic eye indicator closes less than half way on recording peaks.

To Record From Radio-

Recordings from a radio may be made by one of three ways:

1. Place the microphone about 6" to 12" in front of the radio speaker. Turn the radio volume control to a normal level. Setting it to high will cause distortion. Turn the radio tone control to maximum treble. Set the recording level and proceed with recording as described under "To Record From Microphone". This type of recording may not be satisfactory as other sounds may be picked up by the microphone which as a result will be recorded on the tape.

2. Have a shielded cable made up with a two conductor phone plug on one end and two alligator clips on the other end. Connect the alligator clips across the voice coil terminals on the radio speaker and insert the cord plug into the "input jack". Set the radio and Volume and Tone controls as described above. Set the recording level and proceed as described under "To Record From Microphone."

3. Have a shielded cable with a two conductor phone plug on one end and the other end connected across the radio volume control. Insert the phone plug into the "input jack". Set the recording level and proceed with the recording as described under "To Record From Microphone". The position of the radio volume and tone controls has no effect on this set up and may be set anywhere.

To Record From Phonograph-

1. If the phonograph being used has a standard pin type plug on the pickup leads, insert it into the "Radio-Phono" jack. Set the recording level and proceed with the recording as described under "To Record From Microphone".

To Record From Television-

1. Use one of the three methods described under "To Record From Radio" and proceed with the recording as described under "To Record From Microphone".

Fast Forward And Rewind-

High-speed forward or reverse can be obtained by moving the control knob (6) toward the head for

rewind and all the way from the head for fast forward. Movement of this control will wind the tape on the desired reel at a high speed as long as the control is in this position. This control is primarily used in locating a desired portion of a recording in a few seconds.

To Play A Recording-

1. Thread tape as described under "Threading the Tape".

2. Turn control knob (6) to "Forward" and amplifier to playback.

3. Adjust the "Volume" and "Tone" controls for desired listening level.

To Edit And Splice Tape-

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused sections of tape can be spliced together for re-use.

2. For best results, cut tape at a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excessive width.

Erasing Recorded Material-

Units having erase head the tape is erased automatically when unit is in the record position. If it is desired to erase a recording without putting anything on the tape follow the normal recording procedure, but leave the "Volume" control set at its extreme counterclockwise position.

ADJUSTMENTS

Removal Of Main Escutcheon-

To remove front panel, remove "tape feed compensator", tapelifter (if used), the four panel retaining screws at top and bottom edges and remove knob from tape motion control (6). With motor turned off, place tape motion control in forward position and lift off panel (24).

Takeup Drive Belt-

If the takeup reel (20) does not drive properly, loosen the idler bracket mounting screw (46) slightly and move bracket to right, increasing belt (13) tension.

NOTE: Too tight a belt will cause undesirable tension on tape during play. Do not move arm so far to right as to cause the lower corner to dig into the takeup reel hub when the Tape Motion Control is placed in the rewind position.

Supply Reel Brake-

Place Tape Motion Control (6) in "Rewind" position, loosen brake bracket mounting screws (47) slightly and so adjust bracket that pad (28) is just clear of supply reel hub (27). Tighten screw. With this adjustment properly made the brake spring will be forced away from the bracket approximately 1/64 inch when the Tape Motion Control is in "Stop" position.

Rewind Drive Adjustment-

Set rewind drive adjustment nut (25) so that spring (26) does not bear on bearing bracket when Tape Motion Control is in "Stop" position. (This adjustment must not be changed after setting supply reel brake adjustment.)

Takeup Reel Brake-

No adjustment is provided or necessary. Failure could occur only because of excessive wear or damage to pad (18).

Head Adjustments-

Head height is determined by fixed spacers. (A thinner spacer is provided for erase head (21) because of added track width.) Each head is factory adjusted using a very high frequency alignment tape and special indicators. Do not attempt azimuth adjustment unnecessarily.

To adjust head face parallel to tape, loosen retaining nut slightly and, using constant frequency tape, turn head (22) to obtain position providing maximum volume oscilloscope, or meter indication. (Adjust azimuth before completely re-tightening nut.)

To adjust azimuth use a suitable allen wrench and adjust the two set-screws alternately for maximum indication. A high frequency tape (at least 7500 cps) is necessary for precise adjustment. Tighten retaining nut and check to see that no reduction in output results. Use of an oscilloscope or output meter is essential. The procedure for adjustment of binaural heads is indentical. An erase head requires no azimuth adjustment. Merely position the head so face is parallel to tape.

Adjustment Of Tapelifter And Pressure Pad Assemblies-

NOTE: Pressure pad assemblies can be used only on binaural or erase record head assemblies (two heads). The tapelifter mechanism, however, is adaptable to single head unit.

Adjust cam (53) on shift rod (14) so that it is barely in contact with lifter when Tape Motion Control is in forward position. See that lifter assembly (installed after front panel is in place) is bottomed on mounting screw. Bend tapelifter support slightly if necessary to bring tapelifter fingers parallel to face of head and approximately 1/16 inch above top of head bracket (20) when Tape Motion Control (6) is in "Stop" position. When installing or readjusting a pressure pad assembly (57) it may be necessary to bend the pad holder spring (59). With the tape motion control in the "Forward" position, the pad rest squarely and very lightly on the face of the heads and on the tape path. No appreciable flexing of the springs should be noticeable as the pressure pads are raised to the lifted position. The mounting screw is accessible after the panel is in place only if the tape motion control is in the "Stop" or "Rewind" position.

Adjustment Of Tape Feed Compensator-

The purpose of the "tape feed compensator" is to absorb and average out the slight variations in tape

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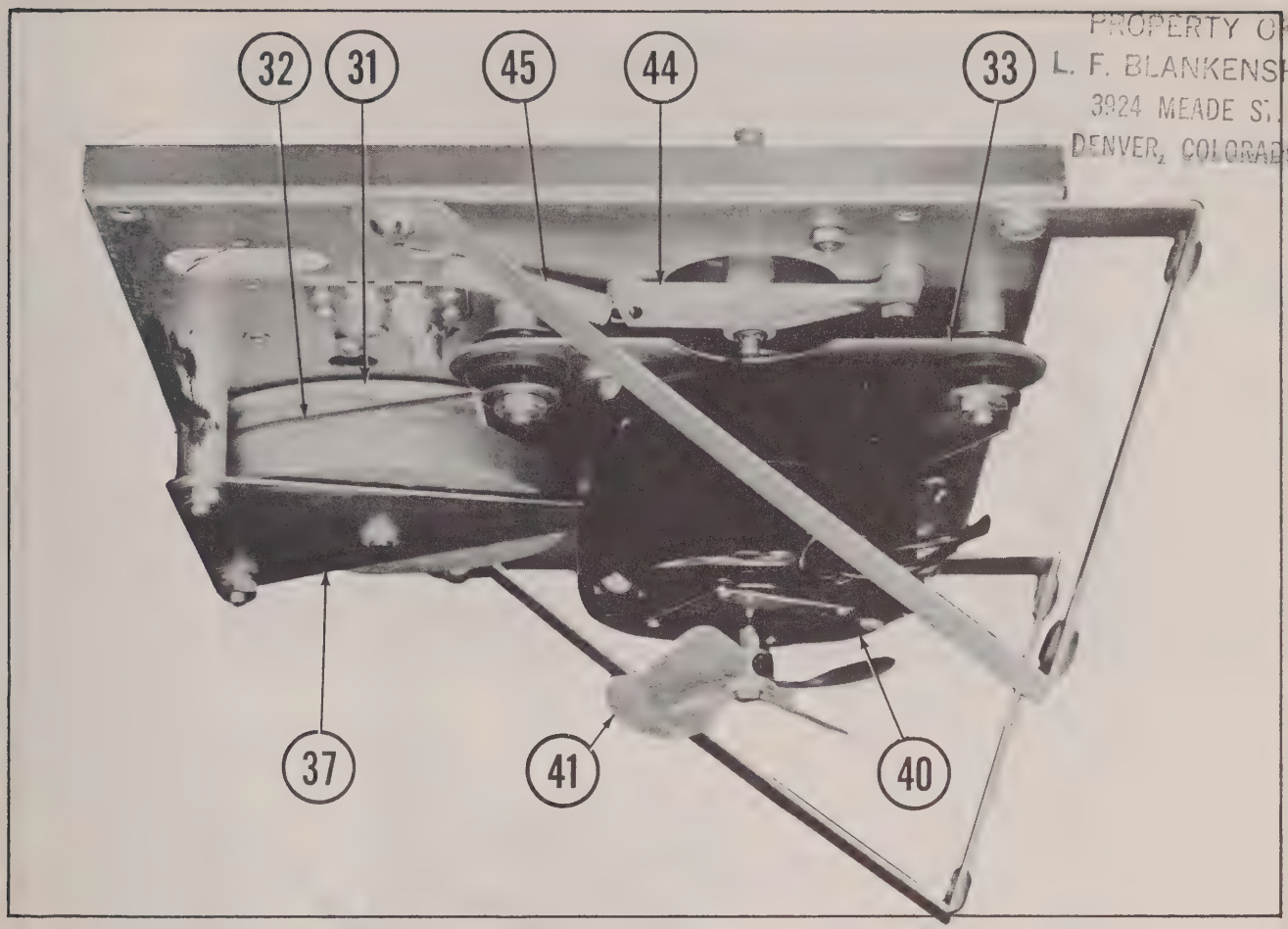


FIGURE 3

speed which can result from tape — sticking, cracked of warped supply reel, or an unbalanced winding of tape. Adjustment is not critical. The position of the compensating spring (9) should be such that it clears the supply reel (27) by approximately 1/8 inch at its unsupported end. The "tape feed compensator" must be installed after the front panel is in place.

Capstan Drive Belt-

To replace the drive belt (32), remove the three nuts in the triangular capstan rear bearing plate (37), remove plate and loop new belt over motor drive pulley (43). The large diameter groove is used for 7 1/2 ips and the smaller groove is used for 3 3/4 ips operation. Place belt (32) over capstan flywheel (31) and replace bearing plate (37). If capstan rear bearing plate (37) has been bent or is improperly installed, binding may result with loss of proper playing speed.

TROUBLES

Fails To Rewind-

1. The small rubber ring (42) loose or broken. To replace the ring, insert a small screw driver under ring and slip it over drive pulley (43).

Wow-

1. Check for flat spots on pressure roller (3). To replace pressure roller, pull off cap (1). If additional grip ring is provided, remove ring by spreading with screwdriver. Take off felt washer (2) and replace pressure roller (3).

Fails To Takeup-

1. Takeup belt (13) loose or broken, replace belt if broken.

2. If takeup reel (15) does not drive properly, loosen the idler bracket mounting screw slightly and move bracket (10) to right, increasing belt tension.

Recorder Fails To Playback-

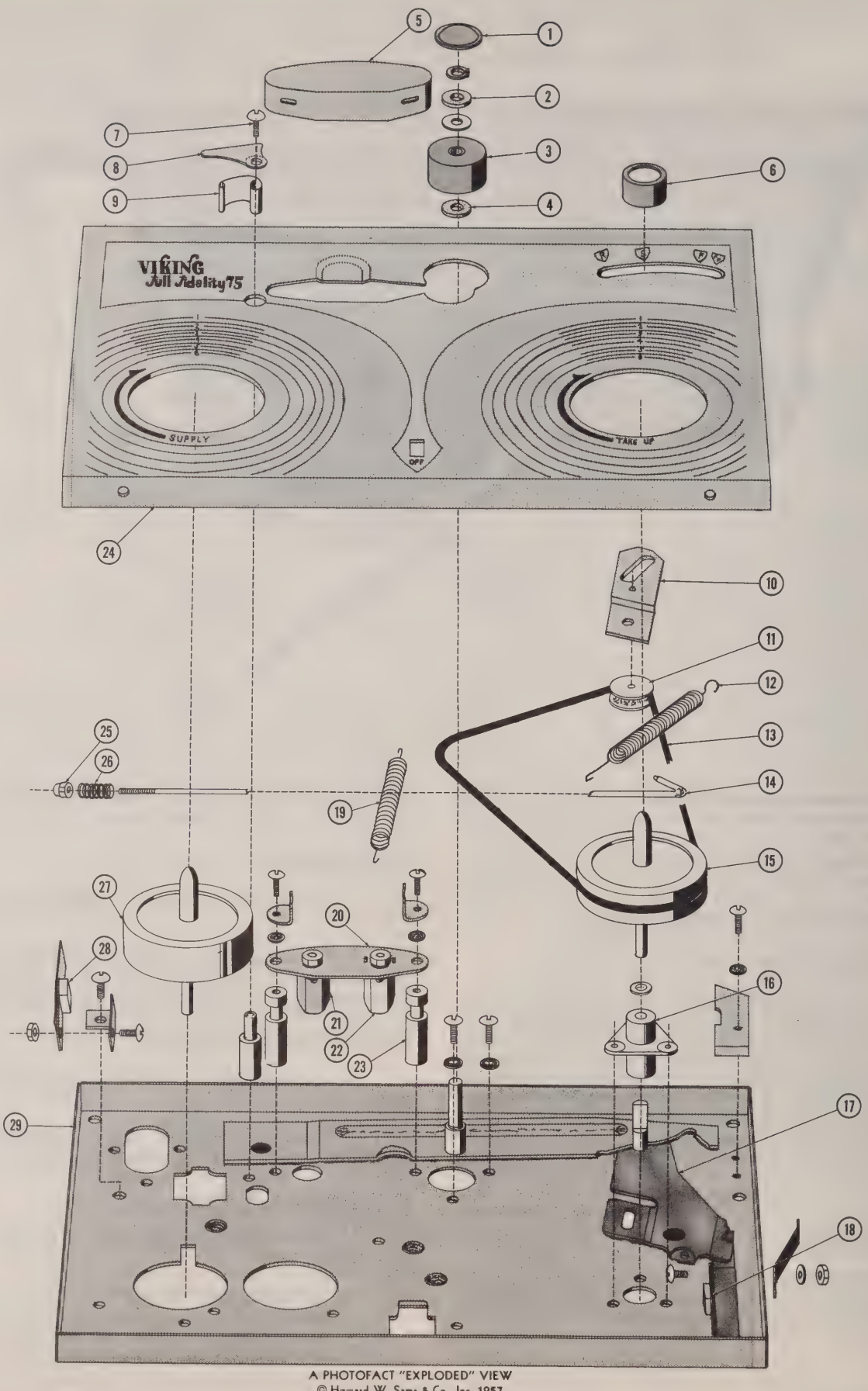
1. Check playback-record head for proper alignment.

2. Check the recorded tape to see that the dull side of the tape faces the playback head (22).

Poor Frequency Response-

1. Accumulation of tape coating residue on the record-play head.

(a) After the "Viking" has been used for some time, the many thousands of feet of tape passing over the heads may have deposited a film of gum dust and dirt on the laminations. This film will reduce the efficiency of the recorder. This accumulation of tape coating residue and foreign material should be periodically removed by the use of a small



A PHOTOFACT "EXPLODED" VIEW
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FIGURE 4A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE.

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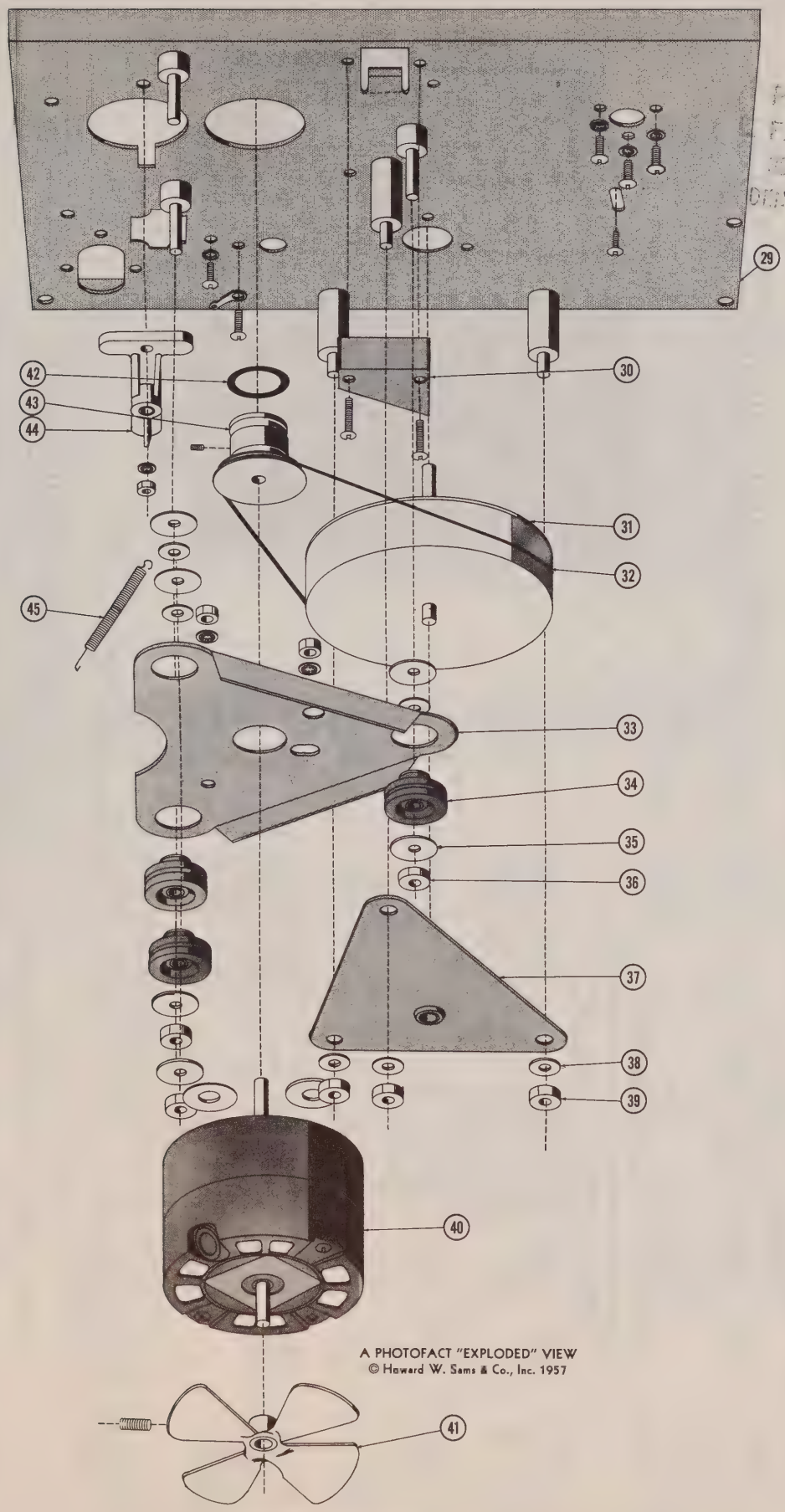


FIGURE 4B. EXPLODED VIEW OF PARTS BELOW BASEPLATE.

PARTS LIST AND DESCRIPTIONS

PB60 PREAMPLIFIER

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	5879	
V2	AF Amplifier Cathode Follower	12AX7	

ITEM No.	USE	TYPE	NOTES
V3	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA VIKING PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	30	250					TD-30-250		
C2A	▲ 20	250		AFH2-26	B0210	FP217	TMD-24	D-110	TVL-2515
B	■ 20	250							
C3	50	50		PRS50V50	BR505	TC39	TD-50-50	FM-0550	TVA-1308
C4	25	25		PRS25V25	BR252	TC26	TD-25-25	FM-0225	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA VIKING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.01	400		BPD-01	DD-103	CUB4S1	GP3-333-103	GEM-411	4TM-S1	
C6	.01	400		BPD-01	DD-103	CUB4S1	GP3-333-103	GEM-411	4TM-S1	
C7	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA VIKING PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	D4261-P5	B-60	A47-500K-Z	Q13-133	U48	Gain Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2A	25K	½	D4261-P6	B-26	A47-25K-S	Q13-120	U29	Equalizer Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA VIKING PART No.	IRC PART No.	NOTES
R3	2.2Meg			BTS-2.2Meg	
R4	330K			BTS-330K	
R5	2.2Meg			BTS-2.2Meg	
R6	100K			BTS-100K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA VIKING PART No.	IRC PART No.	NOTES
R7	1200Ω			BTS-1200	
R8	22K			BTS-22K	
R9	100K			BTS-100K	
R10	6800Ω	2		BTB-6800	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA VIKING PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .16A	355VCT @ .0024A	6.3V @ .6A	6.3VCT @ .42A	A9795					

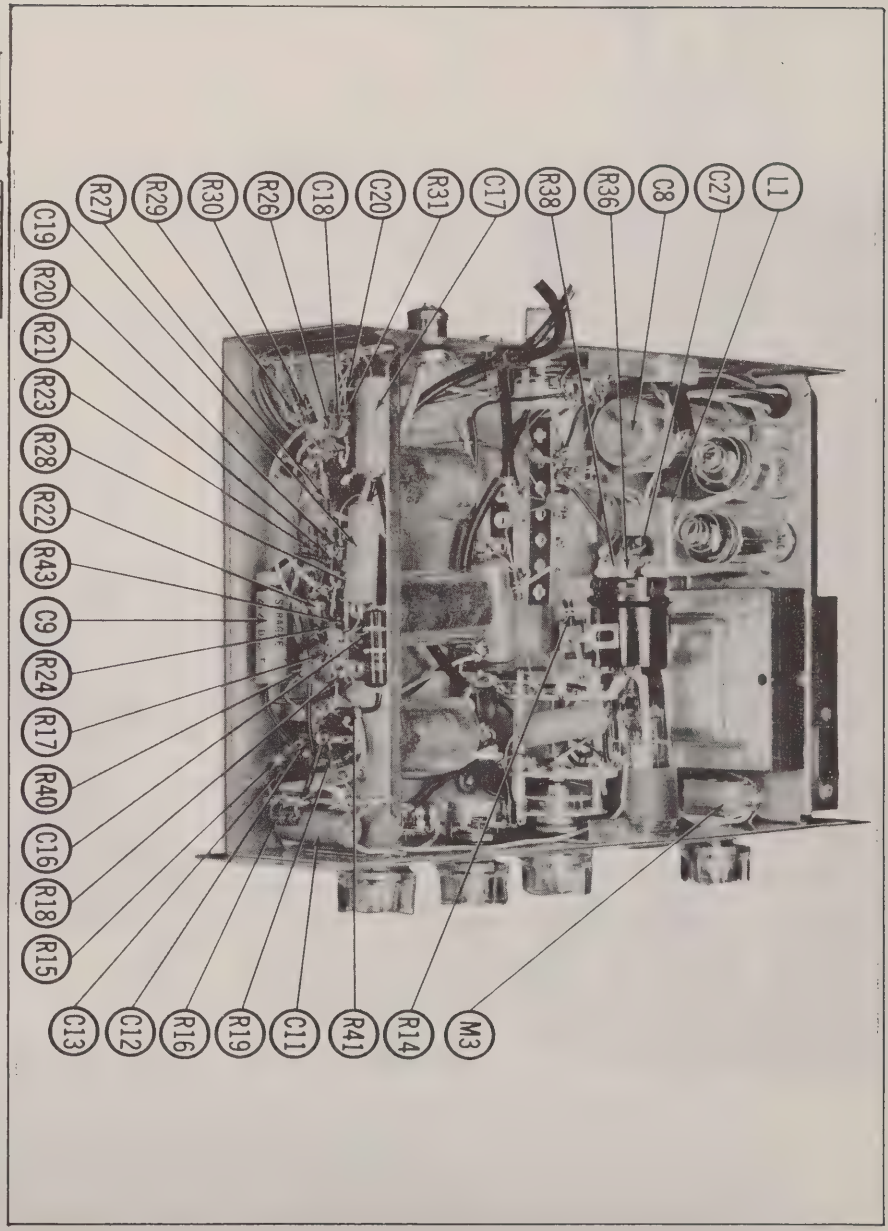
RP61 RECORD-PLAYBACK AMPLIFIER

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V4	Preamplifier	12AX7	
V5	AF Amplifier	12AU7A	
V6	Ease - Bias Oscillator	12AV7	

ITEM No.	USE	TYPE	NOTES
V7	Recording Indicator	6E5	
V8	Rectifier	6X4	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA VIKING PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C8A	■15	475		AFH2-64-50	B0380	FP258	TMD-48	D-260	TVL-2830
B	▲15	475							
C9	25	25		PRS25V25	BBR25-25	TC26	TD-25-25	FM-0225	TVA-1205
C10A	▲30	250		AFH3-89	CO670	FP331	TMT-74	T-340	TVL-3513
B	■30	250							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA VIKING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C11	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C12	50			BPD-00005	D6-500	G034	831-500	UC-545	5GA-Q5	
C13	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C14	100			BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C15	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C16	.01	400		BPD-01	D6-103	CUB4S1	GP3-333-103	GEM-411	4TM-S1	
C17	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C18	100			BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C19	.022	200		BPD-02	DD-203	CUB4S22	817-02	GEM-4122	4TM-S22	
C20	.01	400		BPD-01	DD-103	CUB4S1	GP3-333-103	GEM-411	4TM-S1	
C21	50	1000		HVD-15-47	D6-500	VQ47	1R5KV-470	DC30447	10GAB-Q47	
C22	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C23	500			SI500	D6-501	TP47	GP2K-501	UC-535	5GA-T5	
C24	1000	1000		HVD-15-1000	DD-102	VD1	1R5KV-102	DC3021	10HKB-D1	
C25	500			SI500	D6-501	TP47	GP2K-501	UC-535	5GA-T5	
C26	750			BPD-00075	D6-751	G066	GP2L-751	UC-5375	5GA-T75	
C27	.01	400		BPD-01	DD-103	CUB4S1	GP3-333-103	GEM-411	4TM-S1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA VIKING PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R11A	250K	½	B-51	B-51	A47-250K-Z	Q13-130	U44	Level Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R11A
R12A	5K	½	B-10	B-10	A47-5000-S	Q11-114	U14	Equalization Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R12A
R13A	250K	½	B-51	B-51	A47-250K-Z	Q13-130	U44	Bias Adjust
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R13A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA VIKING PART No.	IRC PART No.	NOTES
R14	100K			BTS-100K	
R15	1000Ω			BTS-1000	
R16	10Meg			BTS-10Meg	
R17	220K			BTS-220K	
R18	220K			BTS-220K	
R19	5600Ω			BTS-5600	
R20	1Meg			BTS-1Meg	
R21	100K			BTS-100K	
R22	100K			BTS-100K	
R23	3300Ω			BTS-3300	
R24	33K			BTS-33K	
R25	120K			BTS-120K	
R26	2.2Meg			BTS-2.2Meg	
R27	68K			BTS-68K	
R28	120K			BTS-120K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA VIKING PART No.	IRC PART No.	NOTES
R29	33K			BTS-33K	
R30	100K			BTS-100K	
31	3300Ω			BTS-3300	
32	220K			BTS-220K	
33	220K			BTS-220K	
34	1800Ω			BTS-1800	
35	50K 5%				
36	4.7Meg			BTS-4.7Meg	
37	10K			BTS-10K	
38	1Meg			BTS-1Meg	
39	2200Ω			BTS-2200	
40	100Ω			BTS-100	
41	100Ω			BTS-100	
42	33K			BTS-33K	
43	220K			BTS-220K	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA VIKING PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Bias Osc.	72Ω*	29Ω					* Tapped @ 38Ω

CHASSIS—BOTTOM VIEW

TRANSFORMER (POWER)

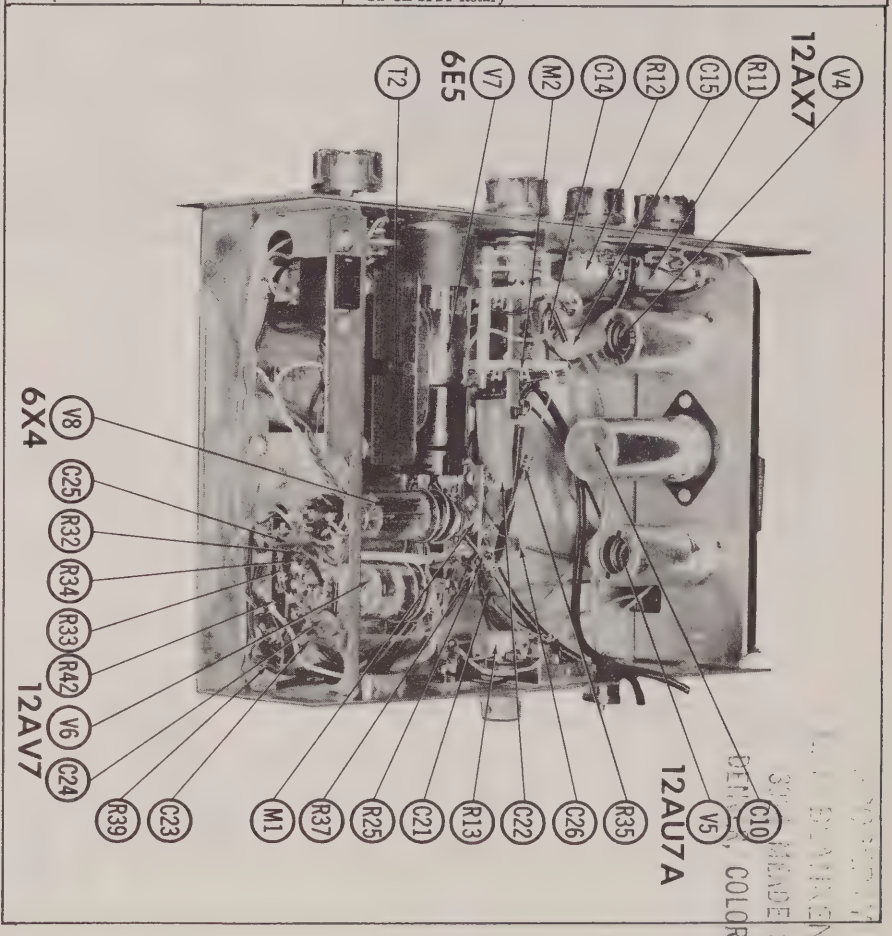
ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA VIKING PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .2A	510VCT @ .009A	6.3V @ .6A	6.3V @ 1.32A	M845					

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA VIKING PART No.	REPLACEMENT DATA SYLVANIA PART No.	NOTES
M1	1N294		1N34A	Bias Diode Record Indicator (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	VIKING PART No.	NOTES
M2	Switch		Play-Record (2 Gang DPDT Rotary Wafer Type)
M3	Switch		On-Off SPST Rotary



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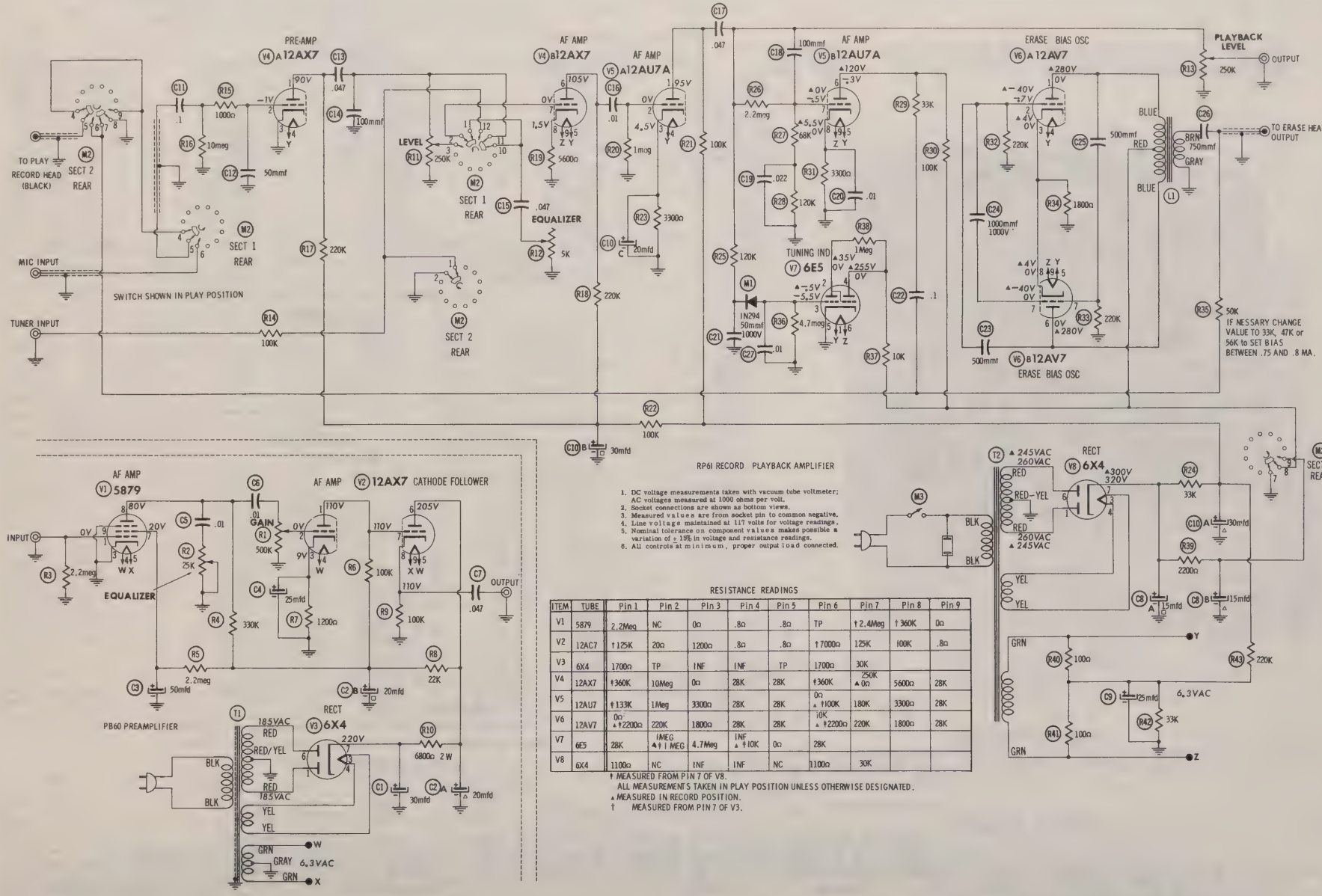

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	5879	2.2Meg	NC	0Ω	.8Ω	.8Ω	TP	†2.4Meg	†360K	0Ω
V2	12AC7	†125K	20Ω	1200Ω	.8Ω	.8Ω	†7000Ω	125K	100K	.8Ω
V3	6X4	1700Ω	TP	INF	INF	TP	1700Ω	30K		
V4	12AX7	†360K	10Meg	0Ω	28K	28K	†360K	250K ▲0Ω	5600Ω	28K
V5	12AU7	†133K	1Meg	3300Ω	28K	28K	0Ω ▲ †100K	180K	3300Ω	28K
V6	12AV7	0Ω ▲†2200Ω	220K	1800Ω	28K	28K	10K ▲ †2200Ω	220K	1800Ω	28K
V7	6E5	28K	1MEG ▲†1MEG	4.7Meg	INF ▲ †10K	0Ω	28K			
V8	6X4	1100Ω	NC	INF	INF	NC	1100Ω	30K		

† MEASURED FROM PIN 7 OF V8.
ALL MEASUREMENTS TAKEN IN PLAY POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN RECORD POSITION.
† MEASURED FROM PIN 7 OF V3.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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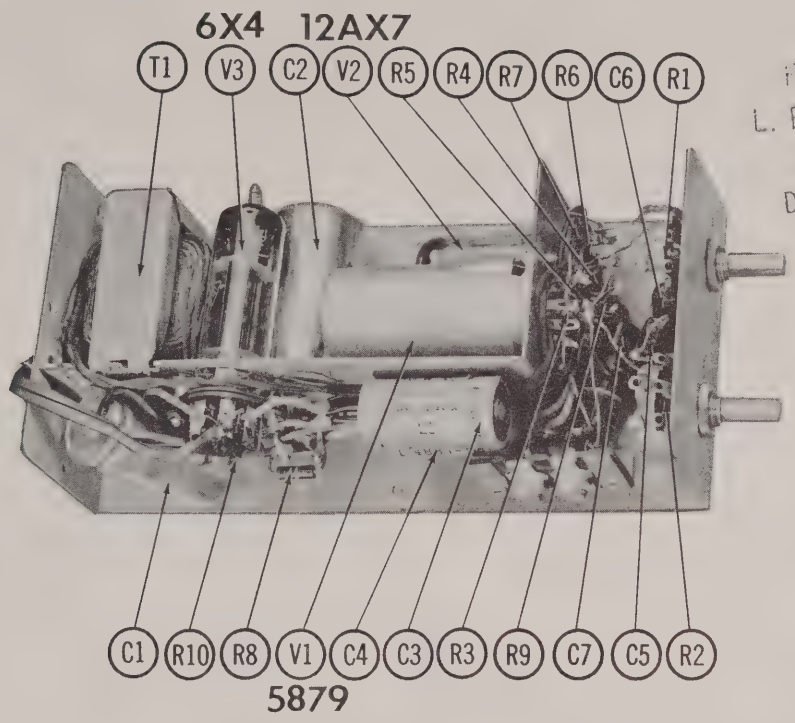

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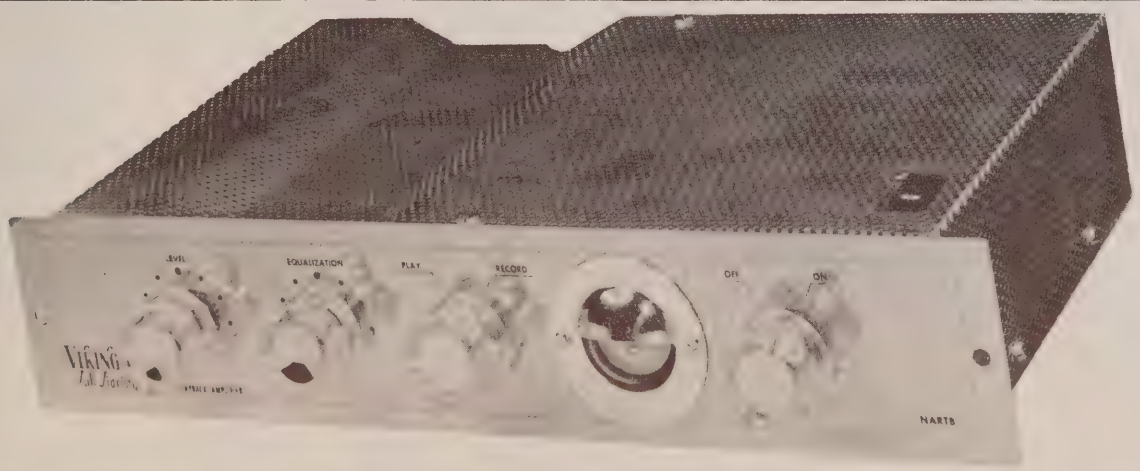
DENVER, COLORADO

CHASSIS PB60 PREAMPLIFIER

PB60 PREAMPLIFIER



RP61 RECORD-PLAYBACK AMPLIFIER

cotton swab on the end of a toothpick and carbon tetrachloride as the cleaner. Be careful not to mar the laminations as they should be smooth to operate properly.

2. To much or too little bias.

(a) This can be caused by the frequency varying from the desired 60 to 70KC. Check and replace the faulty components.

LUBRICATION

All rotating parts are provided with generous size oilite bearings, which are factory lubricated and require no further attention.

An occasional cleaning out of foreign matter under the Main Escutcheon (24) is desirable, and a small drop of oil on the sliding lever members is advisable.

CLEANING

The record head (22), capstan (31) and pressure roller (3) are subject to an accumulation of tape coating residue, which is worn off the tape as it passes these parts. Use a soft cloth and alcohol to clean the head surfaces, capstan and pressure roller.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	D346	Retaining Cup	32	D359	Motor Belt
2	D357	Felt Washer	33		Motor Mounting Bracket
3	D312	Pressure Roller	34		Shock Mount (3)
4	D357	Felt Washer	35		Washer No. 12 (6)
5		Head Cover	36		Nut No. 12-24 (3)
6		Tape Motion Control	37	D325	Outer Bearing Plate
	D-342B	Tape Feed Compensator Includes	38		Washer No. 12
		the following (7, 8 and 9)	39		Nut No. 12-24
7		Cover Retaining Screw	40	D362CA	Motor Assembly (Includes 33, 34,
8		Spring Cover			35 and 36)
9		Compensator Spring	41		Fan (with set screw)
10	D314A	Idler Pivot	42		Drive Belt
11	D315	Idler	43		Pulley
12		Spring	44	D333	Supply Reel Bearing
13	D339	Takeup Belt	45		Spring
14	D316	Control Link	46		Idler Mounting Bracket Screw
15	D332	Takeup Reel Hub	47		Brake Bracket Mounting Screw
16	D334	Takeup Reel Bearing	48	D-368AA	Tapelifter Assembly Includes the
17		Control Arm			following:
18	D361	Brake	49		Lifter Slide
19		Spring	50		Slidewasher
20	D340B	Bracket	51		Lockwasher (2)
21	75-5	Erase Head	52		Slide-Mounting Screw (2)
22	75-1	Record-Playback/ Monitor Head	53		Lifter Cam and Screws
23		Head Support Post	54		Slide Tension Spring
24		Main Escutcheon	55		Lifter Attachment Screw (1)
25		Control Adjustment Nut	56		Tapelifter
26		Control Spring	57	D368XA	Tapelifter, Pressure Pad Assy.
27	D331	Supply Reel Hub			(Same as Item 48 except (56)
28	D318	Supply Wheel Brake			omitted and add the following:)
29		Base Plate	58		Lifter and Pad Holder Bkt.
30		Switch Cover	59		Pad Holder (Spring & Pad)
31	D335XA	Capstan Assembly	60		Pad Holder Mtg. Screw (1)
			61		Pad Cover

CHIP
MEADE ST.
VER, COLORADO

ZENITH
MODELS HFX14, HFX14E (Ch. 3Y03)

ZENITH
MODELS HFX14, HFX14E (Ch. 3Y03)

TRADE NAME	Zenith Models HFX14, HFX14E (Ch. 3Y03)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Three)	Types 12AU7 AF Amplifier, 6V6GT Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .36 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON ZENITH RECORD CHANGER S-14070 - SEE SIMILAR V-M MODEL 1200 - PHOTOFACT SET 290-FOLDER 11 OR RECORD CHANGER MANUAL CM-7.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL HFX14 (Ch. 3Y03)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AU7	
V2	Output	6V6GT	

ITEM No.	USE	TYPE	NOTES
V3	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	350	22-2574	AFH4-53	D0460	FP430.6	TMQ-58	Q-215	TVL-4739
B	■40	350							
C	▲20	350							
D	40	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	1500		22-12	BPD-0015	DD-152	K071	801-0015	DC5215	5HK-D15	
C3	100		22-5	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C4	.1	600	22-417	P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C5	.2	200	22-467							
C6	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C7	.01	600	22-669	BPD-01	D6-103	CUB6S1	GP3-333-103	PT611	6TM-S1	
C8	.003	600	22-288	BPD-003	D6-302	CUB6D3	GP2-333-302	PT623	6TM-D3	
C9	.5	120	22-2573	P288N-5		CUB2P5		PT405	2TM-P5	
C10	.5	120	22-2573	P288N-5		CUB2P5		PT405	2TM-P5	
C11	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	63-2975	AB-69	A47-1Meg-S	Q11-137	U54	Volume
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R1A
R2A	10K	½	63-2974	F1-25				Bass (Panel)
B	250K	½		R2-35				Treble (Rear)
R3A	10K	½	63-2973	BX-69	A47-10K-S	Q11-116	U20	Feedback
B	Shaft		Not Req.	Not Req.	FKS-½	Not Req.	Not Req.	Attach to R3A

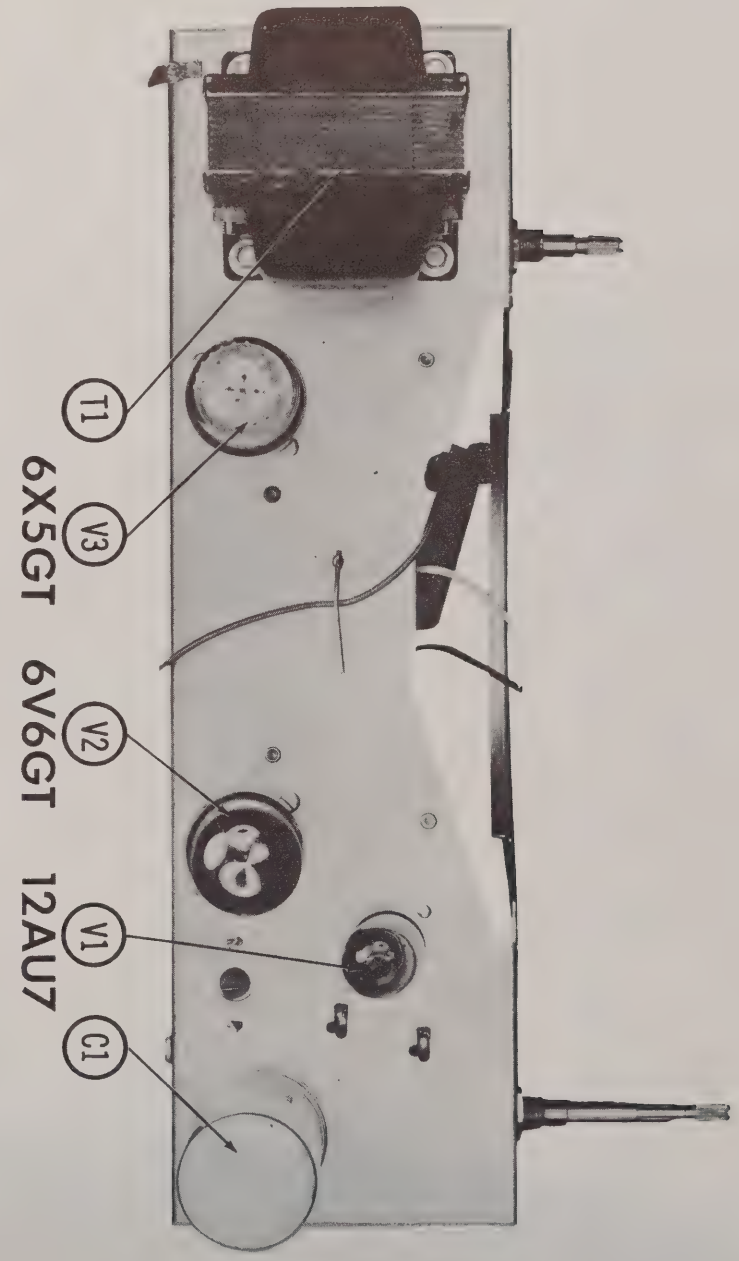
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R4	1Meg		63-1912	BTS-1Meg	
R5	1800Ω		63-1796	BTS-1800	
R6	68K		63-1863	BTS-68K	
R7	1800Ω		63-1796	BTS-1800	
R8	3900Ω		63-1810	BTS-3900	
R9	68K		63-1863	BTS-68K	
R10	1000Ω		63-1785	BTS-1000	
R11	470K		63-1898	BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R12	4700Ω		63-1814	BTS-4700	
R13	180Ω	1	63-2387	BTA-180	
R14	22K		63-1842	BTS-22K	
R15	330Ω		63-1764	BTS-330	
R16	1000Ω		63-1785	BTS-1000	
R17	5600Ω	1	63-3207	BTA-5600	
R18	220Ω	1	63-3206	BTA-220	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .30A	516VCT @ .057A	6.3VAC @ 1.3A		95-1392	P9204①②	P-3148①	PC-8420①	26R31U ①	R-10A①②

① Drill new mounting holes.
② Tape 5V winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7100Ω	3-4Ω	95-1391	Z1011		A-3824	26S48	S-9X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	RCA TYPE No.	
SP1	8"	PM	3-4Ω	49-758	8A21	208S2	
SP2	3½"	PM	12Ω	49-759	3A15T		

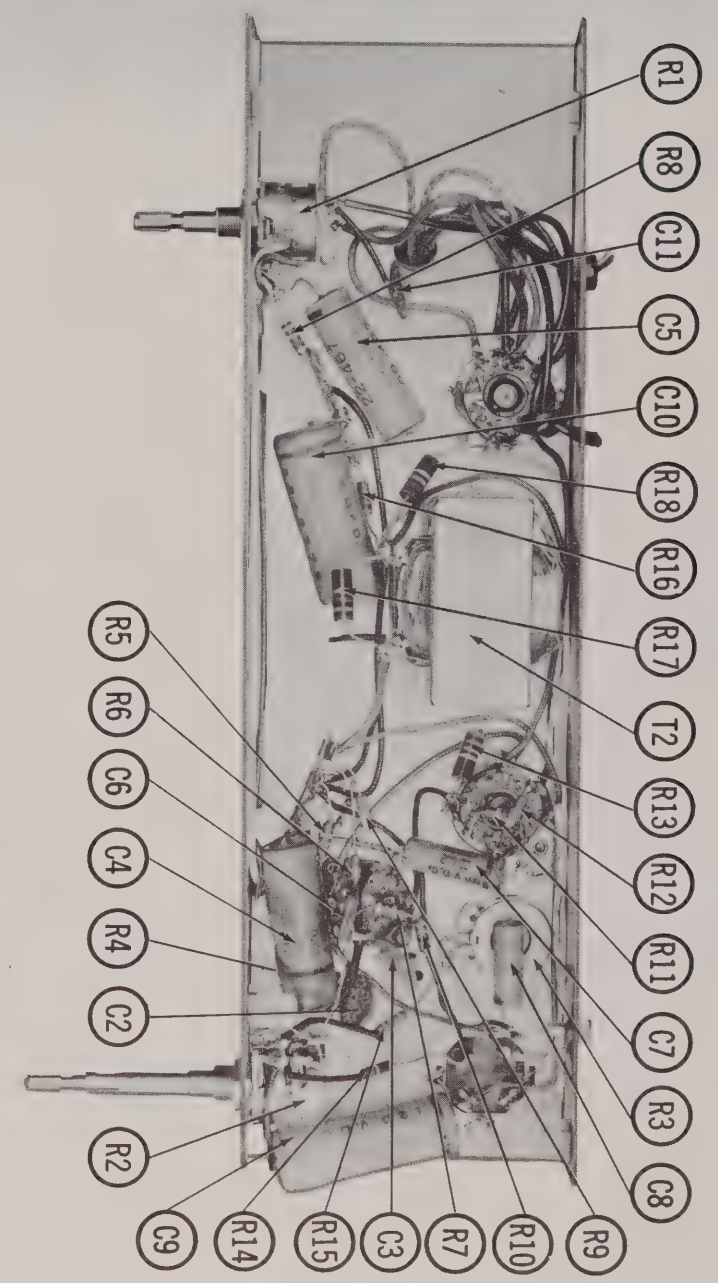
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	ZENITH PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	142-80			56		

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
	Cabinet	14-1953	
	Cabinet	14-1953E	
	Knob	46-1301	Bass & Dummy
	Knob	46-1318	On-Off-Volume & Treble

CHASSIS—BOTTOM VIEW



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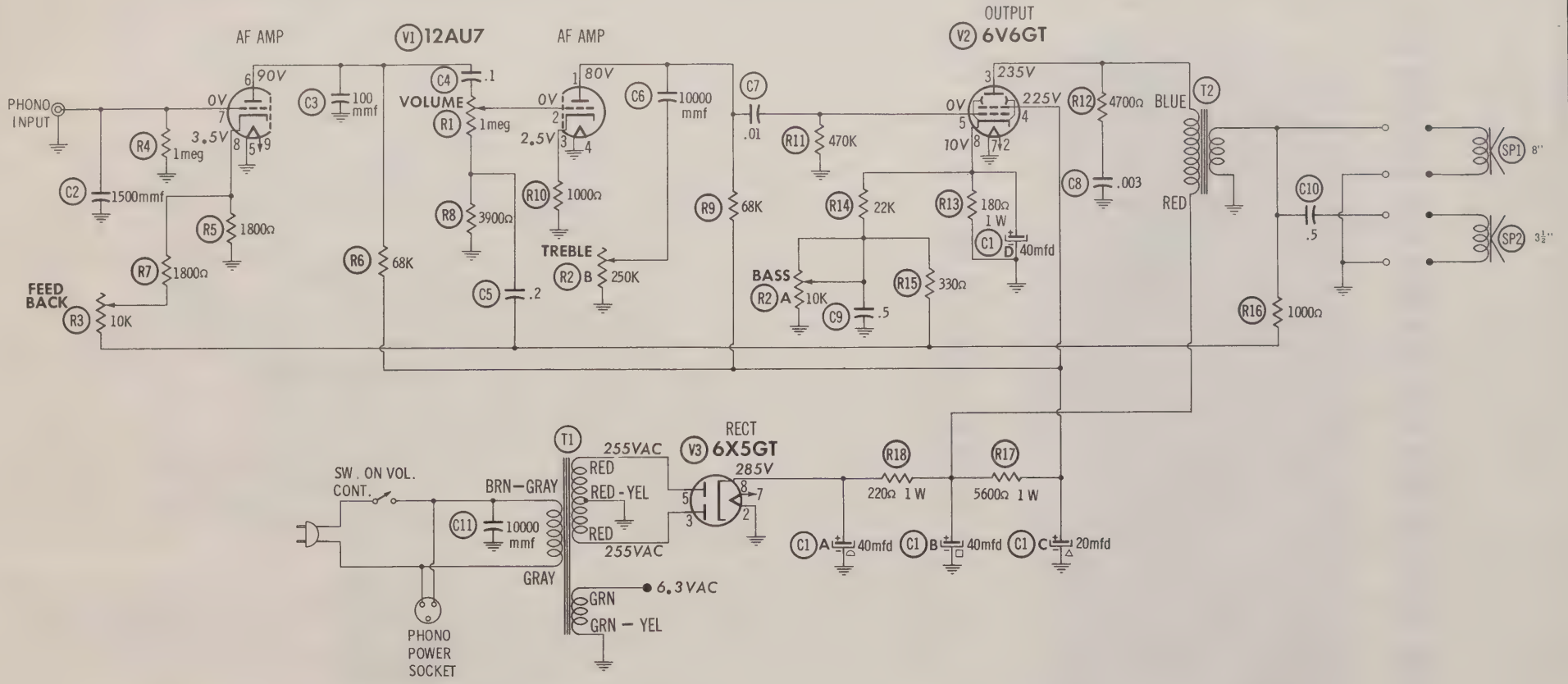
ZENITH
MODEL HEX14 (Ch. 3Y03)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU7	†73K	3900Ω	1000Ω	0Ω	0Ω	†73K	1Meg	1800Ω	.1Ω
V2	6V6GT	NC	.1Ω	†1100Ω	†5800Ω	470K	TP	0Ω	180Ω	
V3	6X5GT	NC	0Ω	150Ω	TP	140Ω	NC	.1Ω	42K	

† MEASURED FROM PIN 8 OF V3.
NC NO CONNECTION
TP TIE POINT

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ZENITH
MODEL Y506L (Ch. 5Y40)

L. F. BLA[illegible] ENSHIP
[illegible] MEADE ST.
[illegible]LORADO

ZENITH
MODEL Y506L (Ch. 5Y40)

ZENITH
MODEL Y506L (Ch. 5Y40)

TRADE NAME	Zenith Model Y506L (Ch. 5Y40)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	Three Power Portable AM Receiver
TUBES (Five)	Types 1U4 RF Amplifier, 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	110-120 Volts AC-DC (or) 4.5 Volts "A" Supply & 90 Volts "B" Supply
RATING	.15 Amp. @ 117 Volts AC (or) 100MA @ 4.5 Volts DC & 11.5MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540KC-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side to pin 6 (grid) of 1R5 (V2). Low side to B-.	455KC (400~Mod)	600KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	"	"	"	A5	Adjust for MINIMUM output.
3.		"	1600KC	1600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	1400KC	"	A7	"

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL Y506L (Ch. 5Y40)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	1U4	
V2	Converter	1R5	
V3	IF Amplifier	1U4	
V4	Det.-AVC-AF Amplifier	1U5	
V5	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■80	150	22-2446						R2314 *
B	▲20	150							
C	200	10							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.022	200	22-2804	BPD-02	DF-203	CUB4S22	817-02	PT4122	2TM-S22	
C3	200		22-2472	N750-DI200	TCN-200	N050	N750-337-201		5TCU-T2	
C4	100		22-5	DI-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C5	4700		22-4	BPD-05	DF-503	K079		UC-5247	5HK-D47	
C6	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C7	3300		22-2670	BPD-0033	D6-332		811-0033	UC-5233	5HK-D33	
C8	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C9	100		22-5	DI-001	DD-101	G042	801-101	UC-531	5GA-T1	
C10	4700		22-4	BPD-0047	DD-472	K079	811-0047	UC-5247	5HK-D47	
C11	4700		22-4	BPD-0047	DD-472	K079	811-0047	UC-5247	5HK-D47	
C12	4700		22-14	BPD-0047	DD-472	K079	811-0047	UC-5247	5HK-D47	
C13	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C14	.1	200	22-2780	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C15	.047	200	22-2792	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C16	68		22-2861	N750-DI68	TCN-68	N038	N750L-680		5TCU-Q68	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	63-3642	B-69-S	A47-1Meg-S	Q11-137	U54	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	Not Req.	SWE-20	76-2	US-27	Attach to R1A

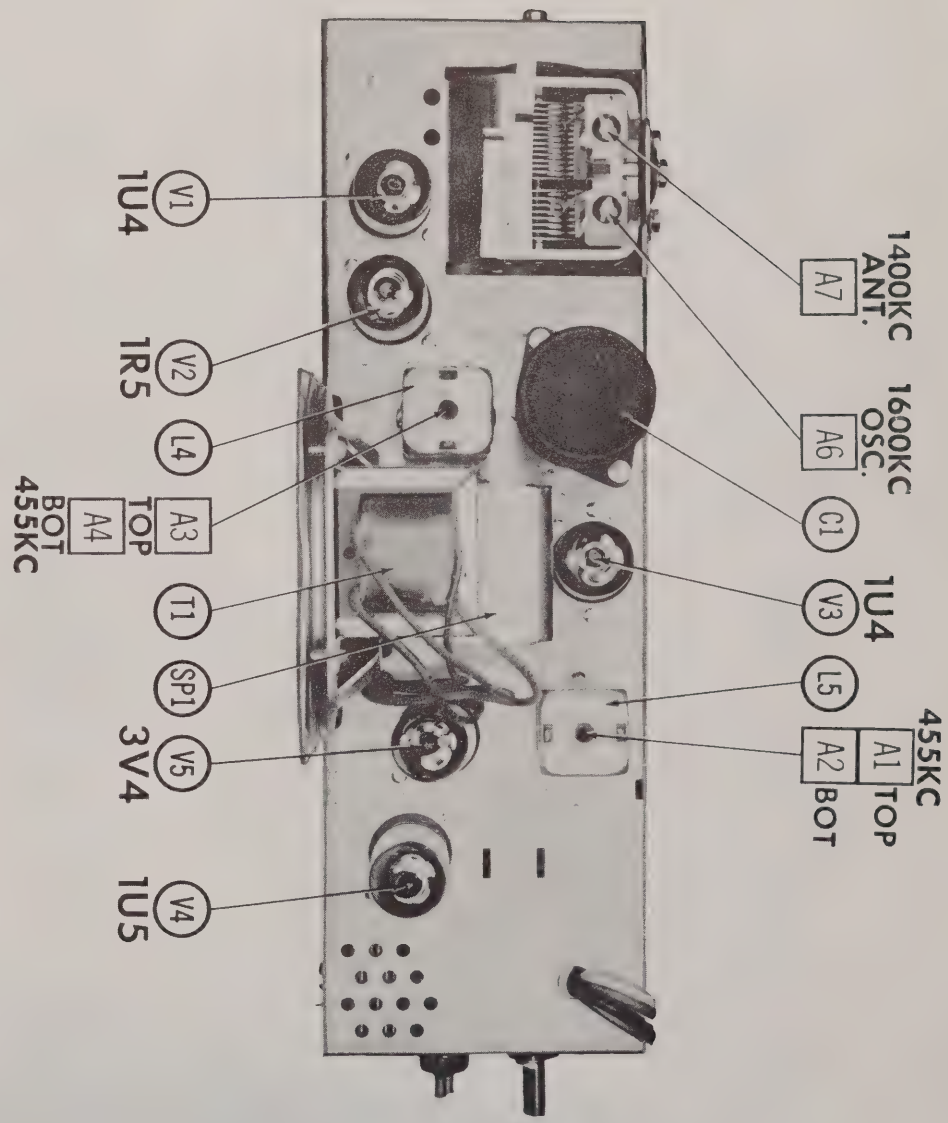
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R2	270Ω		63-1761	BTS-270	
R3	10K		63-1828	BTS-10K	
R4	1Meg		63-1912	BTS-1Meg	
R5	100K		63-1870	BTS-100K	
R6	3900Ω		63-1810	BTS-3900	
R7	10Meg		63-1954	BTS-10Meg	
R8	4.7Meg		63-1940	BTS-4.7Meg	
R9	1Meg		63-1912	BTS-1Meg	
R10	1000Ω		63-1785	BTS-1000	
R11	4.7Meg		63-1940	BTS-4.7Meg	
R12	1Meg		63-1912	BTS-1Meg	
R13	4.7Meg		63-1940	BTS-4.7Meg	
R14	2.2Meg		63-1926	BTS-2.2Meg	
R15	1000Ω		63-1785	BTS-1000	
R16	220Ω		63-1757	BTS-220	
R17	1750Ω	5	63-3259	1 3/4A-1750	
R18	680Ω		63-1778	BTS-680	
R19	150Ω	4	63-2839	PW4-150	Note 1

Note 1. Some versions use 180, 4W in this application (Part #63-2821).

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1030Ω		95-1482 ① or 95-1492						① Supplied with speaker 49-796 . ② Supplied with speaker 49-796.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	RCA TYPE No.	
SP1	3½"	PM		49-796 or 49-803			Includes output transformer

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	.9Ω		S-24640				
L2	IF Trap	22Ω		S-24259				
L3	Osc. Coil	1.1Ω	7.2Ω	S-22322	14-1074	BC-394	70-OSC	Core part #149-85
L4	Input IF	18Ω	18Ω	95-1422	16-6780		13-PC1	Core part #149-85
L5	Output IF	18Ω	18Ω	95-1423				

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	ZENITH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.062A	212-5	1003A	RS075	6S75	5M4	75	

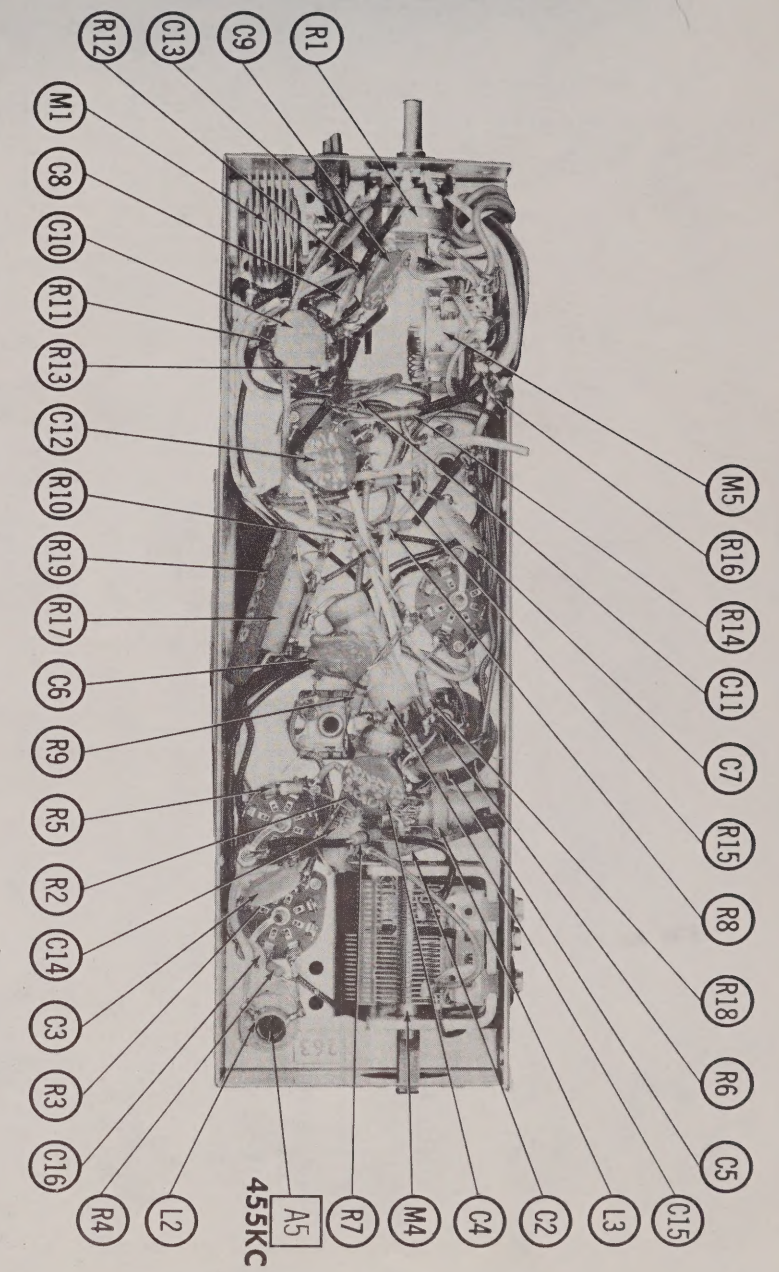
BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	4.5V"A"	Z450	726			D3			
M3	90V "B"	Z90		479			P60		

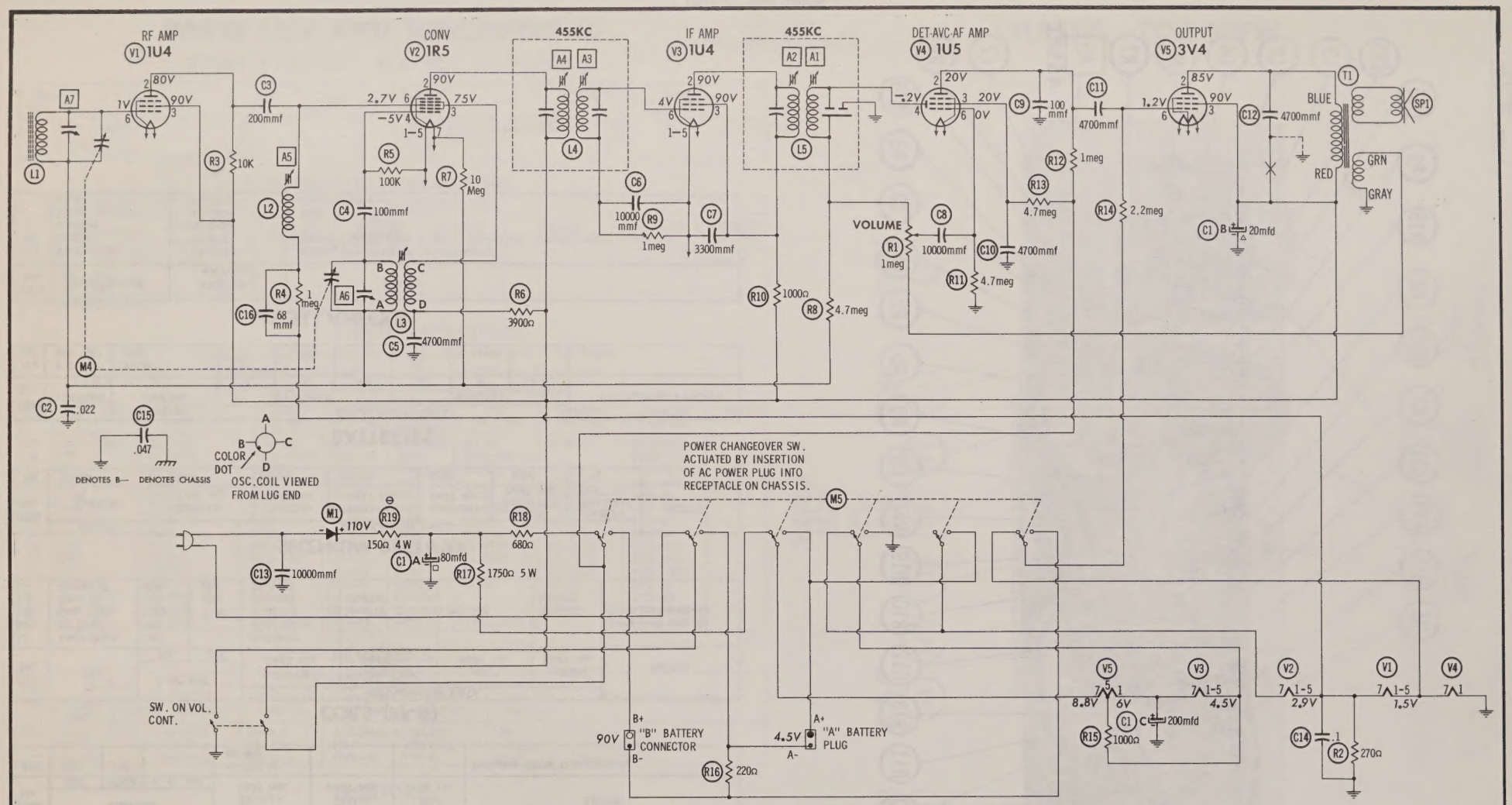
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Tuning Cap.	22-2862	2 Gang (30-390MMF, 15-105MMF)
M5	Switch	85-576	Power Change-over (6 pole - 2 position, rotary, wafer type)
	Cabinet	14-2030	
	Knob	46-1508	Dial
	Knob	46-1512	On-off-volume

CHASSIS—BOTTOM VIEW



ZENITH MODEL Y506L (Ch.5Y40)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1U4	•	†11K	†830Ω	NC	•	4.2Meg	•
V2	1R5	•	†830Ω	†4800Ω	100K	•	1 Meg	•
V3	1U4	•	†1900Ω	†1900Ω	TP	•	1Meg	•
V4	1U5	•	†1Meg	†4.7Meg	1 Meg	TP	4.7Meg	•
V5	3V4	•	†1400Ω	†830Ω	TP	•	2.2Meg	•

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

• DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION.
TP TIE POINT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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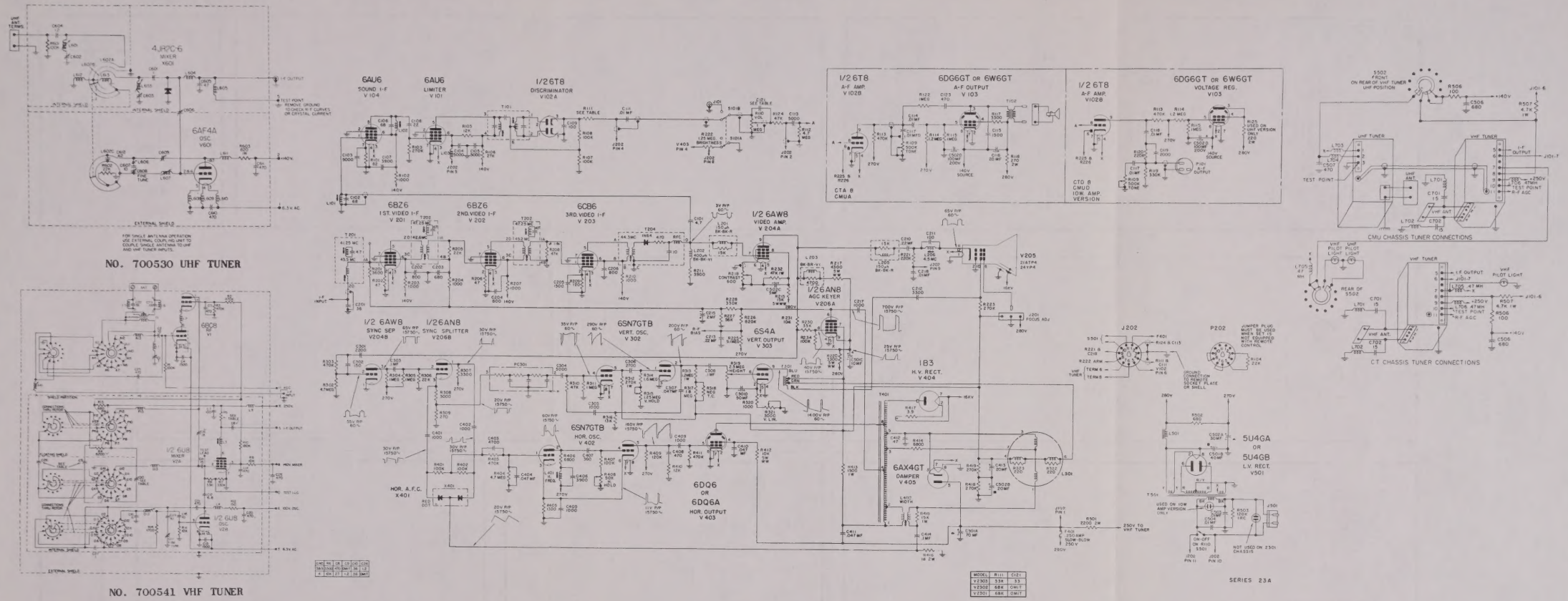


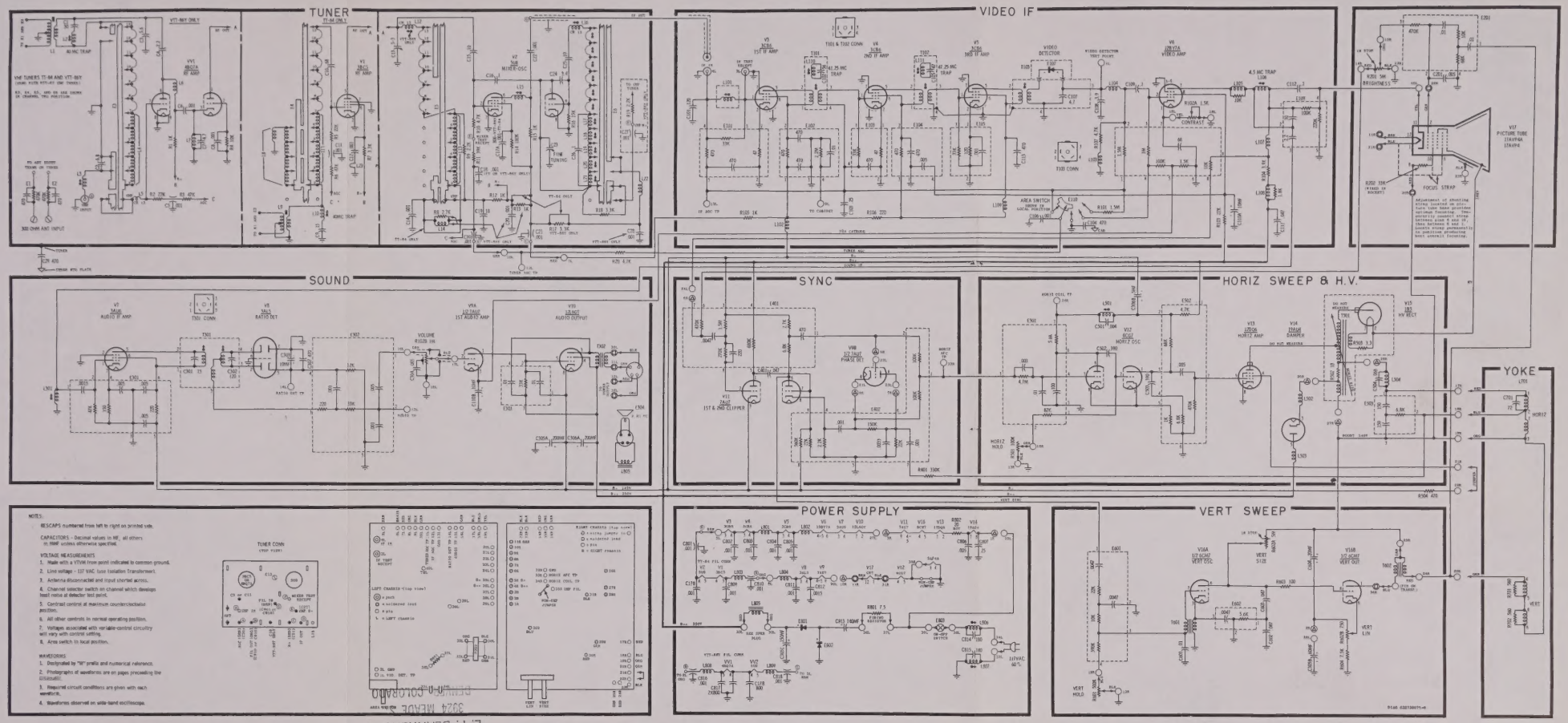
NO. 700530 UHF TUNER

NO. 700541 VHF TUNER

MAGNAVOX CHASSIS	U23-03AA
(23 Series)	V23-01AA
U23-01AA	V23-02AA
U23-02AA	V23-03AA

SCHEMATIC COURTESY OF THE MAGNAVOX CO.

MOTOROLA CHASSIS
MODELS TS-422
17T27 Series TS-422
17T28 Series



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